Author Index to Volume 32

(References with (L) are to Letters to the Editor)

Adams, G. B., Jr. (see Salomon, R. E.)—310(L)

Adler, George and Walter Reams. Heterogeneous nature of the reaction in radiation-induced solid-state polymerization of acrylamide—1698

Adrian, F. J. Matrix effects on the electron spin resonance spectra of trapped hydrogen atoms—972

Agarwala, Umesh, J. B. Hunt, and H. Taube. Tracer experiments on the reaction of UH_3 with aqueous acid—1567 (L)

Alexander, S. Relative signs of spin-spin interactions in nuclear magnetic resonance. II—1700

Allgaier, R. S. (see Brebrick, R. F.)—1826

Allison, Jean B. and Ralph S. Becker. Effect of metal atom perturbations on the luminescent spectra of porphyrins—1410

Almenningen, A., O. Bastiansen, L. Fernholt, and M. Traetteberg. Electron scattering from iodine vapor—616(L)

Altman, Robert L. Thermodynamic properties of C_2—615(L)

Andersen, W. H. (see Chaiken, R. F.)—141

Anderson, D. H., Peter J. Frank, and H. S. Gutowsky. Electron spin resonance studies of semiquinones and the C—F bond—196

Anderson, Ernest W. (see McCall, David W.)—237

Anderson, G. R. (see Wexler, S.)—417

Anderson, Scott, John S. Wiley, and Lloyd J. Hendricks. Zone refining and chemical analysis of KCl and KBr—949(L)

Anet, F. A. L. Spin coupling between protons of different rings in aromatic compounds—1274(L)

Anno, Tosinobu. Semiempirical calculation on the electronic structure of the nitrogen-containing heterocyclic molecules. IV. Electronic structure of pyridine—867

—— **and Akira Sadô.** Electronic states of *p*-benzoquinone. V. Vibrational analysis of the vapor absorption spectrum around the 4500-A region—1602

—— **and Akira Sadô.** Electronic states of *p*-benzoquinone. VI. Molecular geometry in the excited electronic state of the 4500-A absorption system as derived from the Franck-Condon principle—1611

—— **and Akira Sadô.** Semiempirical calculation on the electronic structure of the nitrogen-containing heterocyclic molecules. III. Lower triplet levels of pyrazine—619(L)

Aono, Shigeyuki (see Higuchi, Jiro)—52

Arajs, Sigurds. Paramagnetic susceptibility of polycrystalline thulium from 300 to 1500°K—951(L)

Aroeste, Henry (see Jameson, William J., Jr.)—374

Aronson, S. and J. C. Clayton. Thermodynamic properties of nonstoichiometric urania-thoria solid solutions—749

Atoji, Masao and R. E. Rundle. Neutron diffraction study on sodium tungsten bronzes. . .Na_xWO_3($x=0.9\sim0.6$)—627(L)

Avinor, M. Visible emission of nickel-activated CaS—621(L)

—— **and G. Meijer.** Emission of activated cadmium selenide phosphors—1456

Axe, John D., Ru-tao Kyi, and H. J. Stapleton. Paramagnetic resonance in tetravalent Pa^{231}—1261(L)

Baba, Hiroaki and Satoshi Suzuki. Electronic structure and spectrum of acetanilide—1706

Bär, F., W. Huber, G. Handschig, H. Martin, and H. Kuhn. Nature of the free electron model. The case of the polyenes and polyacetylenes—470

—— (see Kuhn, H.)—467

Barsh, M. K. (see Chaiken, R. F.)—141

Bartell, L. S. Electron diffraction study of monomethyl- and dimethylphosphine—832

—— On the effects of intramolecular van der Waals forces—827

—— **and R. A. Bonham.** Structure of isobutylene—824

—— **and L. O. Brockway.** Electron diffraction study of the structure of trimethylphosphine—512

Barua, A. K. (See Srivastava, B. N.)—427

Bastiansen, O. (see Almenningen, A.)—616(L)

Basu, Sadhan (see Chowdhury, Mihir)—1450

Battino, Rubin (see Wood, Scott E.)—1389

Baum, Lillian H. (see Siegel, Seymour)—1249

Bayes, K. D. and G. B. Kistiakowsky. On the mechanism of the Lewis-Rayleigh nitrogen afterglow—992

Bearman, Richard J. Statistical mechanical theory of the diffusion coefficients in binary liquid solutions—1308

Becker, Ralph S. (see Allison, Jean B.)—1410

Beeler, J. R., Jr., J. D. Stranathan, and G. G. Wiseman. Some effects of vapors on electret behavior—442

Behmoiras, J. (see Stammreich, H.)—1482

Bender, P. A., D. A. Jennings, and W. H. Tanttila. Chlorine nuclear spin-lattice relaxation time in solid sodium chlorate and *p*-dichloro benzene—499

Benedict, W. S., Earle K. Plyler, and E. D. Tidwell. Vibration-rotation bands of ammonia. IV. The stretching fundamentals and associated bands near 3μ—32

Bennett, R. G. and F. W. Dalby. Experimental oscillator strength of the comet-tail system of CO^+—1111

—— **and F. W. Dalby.** Experimental oscillator strengths of CH and NH—1716

Bent, Henry A. Group electronegativities from bond lengths—1582 (L)

Berg, Robert A. and Oktay Sinanoğlu. Ligand-field theory of linear gaseous molecules involving the first transition series elements—1082

Berkowitz, Joseph. Vibrational frequencies of alkali halide dimers. II. Bending, symmetric stretch, and B_{1g} modes—1519

—— (see Chupka, William A.)—1546

Bernheim, R. A. and H. S. Gutowsky. Dependence upon volume of nuclear quadrupole interactions in crystals—1072

Berry, R. Stephen. Correlation of rates of intramolecular tunneling processes, with application to some group V compounds—933

Bersohn, R. Field gradients at the deuteron in molecules—85

Bestul, A. B. Energy requirements of mechanical shear degradation in concentrated polymer solutions—350

Bhatnagar, Hari L. Light scattering by anisotropic inhomogeneities in thin polymer films under strain. I. Simple elongation—674

Bigeleisen, Jacob. Spectral and reactivity differences of transition metal ions in H_2O and D_2O—1583(L)

—— (see Roth, Etienne G.)—612(L)

Bingel, Werner A. Some properties of first order density matrices with special application to many-electron atoms—1522

Bird, J. F., L. Haar, R. W. Hart, and F. T. McClure. Effect of solid propellant compressibility on combustion instability—1423

Birnbaum, G. (see Maryott, A. A.)—686, 1501

Birtley, W. B. (see Rank, D. H.)—296(L), 298(L)

Blackwell, Lawrence A., Yoshiya Kanda, and H. Sponer. Triplet-singlet emission spectra of xylenes in crystalline state at 4.2° and 77°K, and in EPA at 77°K—1465

Blais, Normand C. and Joseph B. Mann. Thermal conductivity of helium and hydrogen at high temperatures—1459
Blinc, R. and A. Prelesnik. NMR study in Rochelle salt—387
Blinder, S. M. Dipole moment function for HD—582
—— Dipole moment of HD—105
—— Generalized perturbation method employing nonorthogonal functions—111
Blomgren, George E. (see Schreurs, Jan W. H.)—1861
Bockhoff, F. J., R. V. Petrella, and E. L. Pace. Thermodynamic properties of sulfuryl fluoride from 12°K to its boiling point. Entropy from molecular and spectroscopic data—799
Bockris, J. O'M. (see Despic, A. R.)—389
Boggs, James E. and A. P. Deam. Measurement of dipole moments at microwave frequencies—315(L)
Boggus, J. D. (see McGlynn, S. P.)—357
Bonham, R. A. (see Bartell, L. S.)—824
Bose, Monisha (see Labes, Mortimer M.)—1570(L)
Bovey, F. A. Spin-lattice relaxation and molecular structure. I. The major importance of intermolecular contributions—1877(L)
Bowers, V. A. (see Foner, S. N.)—963
Boynton, Frederick P. Chemical equilibrium in multicomponent polyphase systems—1880(L)
Brabets, R. I. (see Waterman, T. E.)—304(L)
Bracken, Ronald C. (see Muller, Norbert)—1577(L)
Bradley, John N. Luminosity of shock waves in xenon—1875(L)
Brady, George W. Cluster formation in perfluoroheptane-*i*-octane systems near the consolute temperature—45
—— **and W. J. Romanow.** Structure of water—306(L)
Bray, P. J. (see Negita, Hisao)—314(L)
—— (see Silver, A. H.)—288
Brebrick, R. F. and R. S. Allgaier. Composition limits of stability of PbTe—1826
Bridge, N. K. Transient species in the flash photolysis of halogens in solution—945(L)
Bril, S. (see Stammreich, H.)—1482
Brion, Hélène and Carl Moser. Electronic structure of carbon monoxide—1194
Brockway, L. O. (see Bartell, L. S.)—512
Broersma, S. Rotational diffusion constant of a cylindrical particle—1626
—— Viscous force constant for a closed cylinder—1632
Broida, H. P. and R. W. Nicholls. Phosphorescence of nitrogen and nitrogen-argon deposited films at 4.2°K—623(L)
—— **and M. Peyron.** Emission spectra of N_2, O_2, and NO molecules trapped in solid matrices—1068
—— (see Garvin, David)—880
—— (see Schoen, L. J.)—1184
Brokaw, Richard S. Thermal conductivity of gas mixtures in chemical equilibrium. II—1005
Brooks, F. L., Jr. (see Jones, Walter D.)—124
Brown, R. J. C. Temperature dependence of quadrupole resonance frequencies under constant pressure—116
Buckingham, A. D., T. Schaefer, and W. G. Schneider. Solvent effects in nuclear magnetic resonance spectra—1227
Buff, Frank P. and David J. Wilson. Some considerations of unimolecular rate theory—677
Bunker, Don L. Mechanics of atomic recombination reactions—1001
Burnelle, Louis. MO treatment of acetylene including all electrons—1872(L)
Burns, Gerald. Nuclear quadrupole coupling in the alums—1585(L)
Burns, R. P., G. DeMaria, J. Drowart, and R. T. Grimley. Mass spectrometric investigation of the sublimation of molybdenum dioxide—1363
—— (see DeMaria, G.)—1373
—— (see Drowart, J.)—1366
Burrell, E. J., Jr. EPR characterization of radicals in irradiated tetra-*n*-butyl ammonium halides—955(L)

Cairns, E. J. and J. M. Prausnitz. Kinetics of the hydrolysis of acetyl chloride—169
Calvin, Melvin (see Kearns, David R.)—1020
—— (see Tollin, Gordon)—1013
Cape, J. A. and E. A. Coomes. Kinetics of strontium oxide on tungsten—210
Carlson, F. F. (see King, G. J.)—940(L)
Carlson, Thomas A. Dissociation of C_6H_5T following beta decay—1234
Carpenter, G. B. Density of the bonding electrons in diamond—525
Carr, E. F. Microwave dielectric measurements in a liquid crystal that shows polymesomorphism—620(L)
Casabella, P. A. (see Negita, Hisao)—314(L)
Castner, Theodore, Jr., George S. Newell, W. C. Holton, and C. P. Slichter. Note on the paramagnetic resonance of iron in glass—668
Cater, E. David, Ernest R. Plante, and Paul W. Gilles. Closed crucible—a new technique in high temperature chemistry. Its application to tantalum and molybdenum oxides—1269(L)
Chaiken, R. F., W. H. Andersen, M. K. Barsh, E. Mishuck, G. Moe, and R. D. Schultz. Kinetics of the surface degradation of polymethylmethacrylate—141
Chambré, Paul L. On chemical reactions in free molecule flow—24
Chantry, George W. Temperature dependence of Raman intensities—222
—— **and Robert A. Plane.** Raman intensities of the A_1 lines of oxyanions—319
Chase, A. B. (see Lefever, R. A.)—1575(L)
Chowdhury, Mihir and Sadhan Basu. Some notes on molecular complexes between iodine and polynuclear aromatic hydrocarbons—1450
Chupka, William A. and Joseph Berkowitz. Kinetics of unimolecular decomposition of excited alkylamine ions—1546
Cini-Castagnoli, G. and F. P. Ricci. Self-diffusion in liquid argon—19
Claassen, Howard H. (see Weinstock Bernard)—181
Clark, K. C. (see Young, R. A.)—604, 607
Clarke, John T. and Ralph Gorden, Jr. Thermal conductivity of condensed films: methane—705
Clayton, J. C. (see Aronson, S.)—749
Clementi, Enrico and Kenneth S. Pitzer. Low excited states in C_2—656
Clemett, Colin and Mansel Davies. Molecular rotation and dielectric relaxation in a crystal lattice—316(L)
Cleveland, Forrest F. (see Sundaram, S.)—166, 251, 1554
Clinton, William L. Dynamical Jahn-Teller theorem—626(L)
Cochran, E. L. (see Foner, S. N.)—963
Coggeshall, Norman D. Ionization potentials and electrostatic polarization—1265(L)
Coll, H. (see Debye, P.)—939(L)
Collins, Frank C. (see Mandel, Gerald)—1796
Companion, Audrey L. and Frank O. Ellison. Calculation of the dissociation energy of NH by a semiempirical interpolative method—1132
Conway, John G. and John B. Gruber. Luminescence spectrum of $PmCl_3$—1586(L)
—— (see Gruber, John B.)—1178, 1531
Coomes, E. A. (see Cape, J. A.)—210
Corneliussen, Roger D. (see Lawson, A. W.)—447
Costain, C. C. and J. M. Dowling. Microwave spectrum and molecular structure of formamide—158
Cotton, F. Albert (see Holm, Richard H.)—1168

Cowen, J. A. (see Spence, R. D.)—624(L)
Cox, Henry L., Jr., and Dudley Williams. Zeeman splitting of nuclear quadrupole levels in cuprite—633(L)
Coyle, T. D. and F. G. A. Stone. NMR studies on mixed boron halides. Detection of the new halide BBrClF—1892(L)
Cramer, W. H. and A. B. Marcus. Elastic and inelastic scattering of low-velocity D^- and D_2^+ in deuterium—186
Crosby, G. A. and R. E. Whan. Extreme variations of the emission spectra of dysprosium chelates—614(L)
Crowell, A. D. Chemisorption of CO on Ni using a radioactive tracer—1576(L)
Curl, R. F., Jr. (see Kwei, George Hsing)—1592(L)
Current, J. H. (see Rabinovitch, B. S.)—493

Dahler, John S. and Joseph O. Hirschfelder. "Improved" free-volume theory of liquids. II—330
—— (see O'Toole, James T.)—1097
Dalby, F. W. (see Bennett, R. G)—1111, 1716
Dauben, Carol H. (see Templeton, David H.—1515
Davies, Mansel (see Clemett, Colin)—316(L)
Deam, A. P. (see Boggs, James E.)—315(L)
Dearman, Henry H. (see Lefebvre, Roland)—176
Debye, P., H. Coll, and D. Woermann. Critical opalescence of polystyrene solutions—939(L)
Decius, J. C. Emission by vibrational fundamentals and overtones in shock waves—1262(L)
Deguchi, Yasuo. Proton hyperfine spectra of diphenyl picryl hydrazyl—1584(L)
deHaas, N. (see Walker, R. E.)—1314
de Kowalewski, Dora G. (see Kowalewski, Valdemar J.)—1272(L)
DeMaria, G., R. P. Burns, J. Drowart, and M. G. Inghram. Mass spectrometric study of gaseous molybdenum, tungsten, and uranium oxides—1373
—— (see Burns, R. P.)—1363
—— (see Drowart, J.)—1366
Despic, A. R. and J. O'M. Bockris. Kinetics of the deposition and dissolution of silver—389
de Vries, A. E. and M. F. Laranjeira. Thermal diffusion of ternary mixtures—1714
DeVries, R. C. (see Sears, G. W.)—93
Dibeler, Vernon H. (see Herron, John T.)—1884(L)
Diesen, R. W. (see Harrington, R. E.)—1245
Dijkerman, H. A. (see Dymanus, A.)—717
Dills, D. H. (see Rabinovitch, B. S.)—493
Dininny, R. E. and E. L. Pace. Thermodynamic properties of trifluoromethanethiol from 12°K to its boiling point. Entropy from molecular and spectroscopic data—805
Dorfman, Leon M. and Myran C. Sauer, Jr. Correlation of molecular yields in hydrocarbon radiolyses with mass spectral data—1886(L)
—— (see Matheson, Max S.)—1870(L)
Dorman, F. H., J. D. Morrison, and A. J. C. Nicholson. Threshold law for the probability of excitation by electron impact—378
Dorn, W. S. Variational principles for chemical equilibrium—1490
Douglass, Dean C. Quadrupole resonance spectrum of chloranil and its hexamethylbenzene complex—1882(L)
—— (see McCall, David W.)—1876(L)
Dowling, J. M. (see Costain, C. C.)—158
Dows, David A. Intermolecular coupling of vibrations in molecular crystals—1342
—— **and J. L. Hollenberg.** Study of infrared reflection spectrum of liquid C_6H_6—1581(L)
Doyle, G. J. (see Ford, H. W.)—1256
Dressler, K. (see Schnepp, O.)—1682
Drickamer, H. G. (see Eppler, R. A.)—1418, 1734
Drowart, J., G. DeMaria, R. P. Burns, and M. G. Inghram. Thermodynamic study of Al_2O_3 using a mass spectrometer—1366
—— (see Burns, R.P.)—1363
—— (see DeMaria, G.)—1373
Dubb, Hubert E. (see Whitman, Donald R.)—67
Dymanus, A., H. A. Dijkerman, and G. R. D. Zijderveld. New method for the measurement of microwave integrated line intensities and line widths—717

Eastman, D. P. (see Rank, D. H.)—296(L), 298(L)
Ehrlich, Gert and F. G. Hudda. Surface migration of nitrogen on tungsten—942(L)
Eisenstein, J. C. Spectrum of K_2ReCl_6—1887(L)
Ejima, T. (see Straumanis, M. E.)—629(L)
Elder, E. (see McGlynn, S. P.)—357
Ellison, Frank O. (see Companion, Audrey L.)—1132
Endow, N. (see Ford, H. W.)—1256
Englman, Robert. Mechanism for the optical absorption in some paramagnetic salts—299(L)
Eppler, R. A. and H. G. Drickamer. Effect of pressure on color centers in Ag^+-doped alkali halides—1734
—— **and H. G. Drickamer.** Effect of pressure on the spectra of color centers—1418
Epstein, A. and Bernard S. Wildi. Electrical properties of poly-copper phthalocyanine—324
Estin, A. (see Maryott, A. A)—1501
Ewing, George E., Warren E. Thompson, and George C. Pimentel. Infrared detection of the formyl radical HCO—927
Eyring, Edward M. (see Kropf, Allen)—149
Eyring, Henry (see Kropf, Allen)—149

Falconer, T. W. (see Hatcher, C.R)—28
Fallon, Robert J., Joseph T. Vanderslice, and Edward A. Mason. Potential energy curves for lithium hydride—1453
——, **Joseph T. Vanderslice, and Edward A. Mason.** Potential energy curves of hydrogen fluoride—698
Ferguson, J. Crystal spectra of metal coordination compounds. I. Tetrahedral cobalt(II)—528
—— Crystal spectra of metal coordination compounds. II. Violet form of $CoPy_2Cl_2$ and $CoCl_2 \cdot 6H_2O$—533
Fernholt, L. (see Almenningen, A.)—616(L)
Ferriso, C. C. and D. F. Hornig. Absolute infrared intensities of the ammonium ion in crystals—1240
Fitzgerald, Edwin R. Crystalline transitions and mechanical resonance dispersion in vinyl and ethyl stearate—771
Flournoy, John M. (see Siegel, Seymour)—1249
Foner, S. N., E. L. Cochran, V. A. Bowers, and C. K. Jen. Multiple trapping sites for hydrogen atoms in rare gas matrices—963
Ford, H. W., G. J. Doyle, and N. Endow. Rate constants at low concentrations. V. Mechanism of reaction of ozone with photolyzing nitrogen dioxide in presence of excess oxygen—1256
Foreman, William T. Streaming birefringence and optical relaxation time of vanadium pentoxide sols—277
Foss, Robert P. (see Moore, William M.)—1594(L)
Fox, R. E. Negative ion formation in NO_2 by electron attachment—285
—— Threshold ionization of HCl by electron impact—385
Fraenkel, George K. (see Schreurs, Jan W. H.)—1861
—— (see Stephen, Michael J.)—1435
Frank, Peter J. (see Anderson, D. H.)—196
Fricke, Hugo and David L. Phillips. Application of a high-speed electronic computer in diffusion kinetics. II. Depletion effect in the spherical one-radical one-solute model—1183

Friedman, Harold L. Mayer's ionic solution theory applied to electrolyte mixtures—1134
—— Thermodynamic excess functions for electrolyte solutions—1351
Frisch, Harry L. and E. Helfand. Conditions imposed by gross properties on the intermolecular potential—269
—— (see Reiss, Howard)—119
—— (see Rice, Stuart A.)—1026
Fryburg, George C. and Helen M. Petrus. Variation with temperature of the recombination of oxygen atoms on a platinum surface—622(L)
Fujita, Hiroshi. Method for calculating average molecular weights and molecular weight distributions of polymeric materials from sedimentation equilibrium experiments—1739
Fujiwara, Shizuo and Hiroshi Shimizu. Analysis of the nuclear magnetic resonance spectrum of a six-spin system of monofluorobenzene—1636
Fukui, Kenichi, Keiji Morokuma, Teijiro Yonezawa, and Chikayoshi Nagata. Charge transfer mechanism of reaction of conjugated molecules—1743

Gans, Paul J. (see Krieger, Irvin M.)—247
Gant, Preston L. and Kang Yang. Reactions initiated by the β decay of tritium. III. Tritium-cyclopropane system—1757
Garn, W. B. Detonation pressure of liquid TNT—653
Garner, Clifford S. (see Pearson, Irving M.)—1214
Garvin, David, H. P. Broida, and H. J. Kostkowski. Chemically induced vibrational excitation: Hydroxyl radical emission in the 1–3 micron region produced by the H+O_3 atomic flame—880
Geller, S. On the structure of trimethylamine-trimethylboron—1569(L)
Gilles, Paul W. (see Cater, E. David)—1269(L)
Glasner, Abraham and Renata Reisfeld. Absorption spectra of mercury, bismuth, and antimony halides in pressed alkali halide disks—956(L)
Glockler, George. Estimated electron affinities of the light elements—708
Gorden, Ralph, Jr. (see Clarke, John T.)—705
Gordy, Walter (see Miyagawa, Ichiro)—255
Goring, D. A. I. (see Gupta, Prem R.)—1890(L)
Graven, W. M. (see Solomon, R. E.)—310(L)
Gray, Peter and L. W. Reeves. Potential energy barrier to rotation in methyl nitrite measured by PMR—1878(L)
Graybeal, Jack D. Microwave spectrum and molecular structure of monochloroacetonitrile—1258
Greene, E. F., R. W. Roberts, and J. Ross. Variation of a chemical reaction cross section with energy—940(L)
Grimley, R. T. (see Burns, R. P.)—1363
Grønlund, Finn and Walter J. Moore. Sputtering of silver by light ions with energies from 2 to 12 kev—1540
Grossweiner, L. I. and E. F. Zwicker. Free radicals from the flash photolysis of phenol—305(L)
Gruber, John B. and John G. Conway. Crystal field splitting of energy levels of thulium ethylsulfate—1531
—— **and John G. Conway.** Electronic energy levels and crystal quantum states of Tm(IV)—1178
—— (see Conway, John G.)—1586(L)
Gupta, Prem R. and D. A. I. Goring. Sedimentation of polydisperse macromolecules—1890(L)
Gutowsky, H. S. and D. W. McCall. Temperature dependence of the chlorine pure quadrupole resonance frequency in molecular crystals—548
—— (see Anderson, D. H.)—196
—— (see Bernheim, R. A.)—1072
—— (see Kusumoto, Hazime)—724
Guttman, A. (see Takeyama, H.)—634(L)
Guzzo, A. V. (see Helmholz, L.)—302(L)

Haar, L. (see Bird, J. F.)—1423
Haas, C. and D. F. Hornig. Inter- and intramolecular potentials and the spectrum of ice—1763
Hall, T. P. P. and W. Hayes. Paramagnetic resonance of Co^{2+} with four- and eightfold coordination—1871(L)
Ham, Norman S. Electronic interaction in the free-electron network model for conjugated systems. III. Spectra of hydrocarbons other than even alternants—1445
Hammond, George S. (see Moore, William M.)—1594(L)
Handschig, G. (see Bär, F.)—470
—— (see Kuhn, H.)—467
Hanking, B. M. (see Wickersheim, K. A.)—271
Hanlon, J. E. Diffusion of cadmium in pure and cadmium doped AgBr—1492
Hardwick, R. (see Mosher, Harry S.)—1888(L)
Harrington, R. E., B. S. Rabinovitch, and R. W. Diesen. Unimolecular decomposition of chemically activated *sec*-deuterobutyl radicals from D atoms plus *cis*-butene-2—1245
Harris, Frank E. Molecular orbital studies of diatomic molecules. I. Method of computation for single configurations of heteronuclear systems—3
Harris, Robert A. and Stuart A. Rice. Kinetic theory of moderately dense rigid sphere fluids. III. The formulation and solution of the transport equation for binary mixtures—538
Harrison, Don E., Jr. Extended theory of sputtering—1336
Hart, R. W. (see Bird, J. F.)—1423
Harteck, Paul (see Reeves, Robert R.)—632(L), 946(L)
Hatcher, C. R., T. W. Falconer, and W. E. Millett. Annihilation of positrons in organic liquids—28
Hayashi, Tarō, Kōko Maeda, Shōji Shida, and Kazuo Nakada. A new phototropic substance and its ESR—1568(L)
Hayes, W. (see Hall, T. P. P.)—1871(L)
Hecht, Charles E. Trapped free radical concentrations—365
Heddle, D. W. O. Photodissociation in the Schumann-Runge system of oxygen—1889(L)
Heinmets, F. Induced emf in electrolytes—1264(L)
Helfand, Eugene and John G. Kirkwood. Theory of the heat of transport of electrolytic solutions—857
—— **and Stuart A. Rice.** Principle of corresponding states for transport properties—1642
—— (see Frisch, H. L.)—269
—— (see Reiss, Howard)—119
Heller, Chonon and Harden M. McConnell. Radiation damage in organic crystals. II. Electron spin resonance of $(CO_2H)CH_2CH(CO_2H)$ in β-succinic acid—1535
Heller, Wilfried (see Nakagaki, Masayuki)—835
Helmholz, L. and A. V. Guzzo. Note on the paramagnetic resonance spectrum of fluoroferrate ion FeF_6^{---}—302(L)
Hendricks, Lloyd J. (see Anderson, Scott)—949(L)
Herman, Robert and Robert J. Rubin. Determination of the dipole moment function from infrared band intensities of diatomic molecules—1393
Herron, John T. and Vernon H. Dibeler. Ionization potential of fluorine—1884(L)
Herschbach, Dudley R. (see Kwei, George H.)—1270(L)
Hersh, Herbert N. (see Markham, Jordan J.)—1885(L)
Herzfeld, C. M. (see Reed, S. G.)—1
Hickam, W. M. (see von Hoene, J.)—876
Hickmott, T. W. Interaction of hydrogen with tungsten—810
Higuchi, Jiro. Some calculations based on an LCGO-MO treatment—636(L)
—— **and Shigeyuki Aono.** Isotropic proton hyperfine interaction in the methyl radical—52
Hirschfelder, Joseph O. (see Dahler, John S.)—330
—— (see Jepsen, Donald W.)—1323
Hirshfeld, M. A., J. H. Jaffe, and S. Kimel. Pressure-induced shifts of HCl lines due to foreign gases—297(L)

Hisatsune, I. C. and E. S. Jayadevappa. Vibrational intensities of benzene in the liquid phase—565
Hodnett, Ernest M. and Louis Kaplan. Isotope effects in the chromic acid oxidation of benzyl-α-d alcohol—312(L)
Hoeve, C. A. J. Unperturbed chain dimensions of polymeric chains—888
Hoffman, J. M., H. H. Nielsen, and K. Narahari Rao. K-type doubling in phosphine—1597(L)
Hollenberg, J. L. (see Dows, David A.)—1581(L)
Holm, Richard H. and F. Albert Cotton. Magnetic investigations of spin-free cobaltous complexes. II. Tetrahedral complexes—1168
Holmberg, R. W. (see Zeldes, Henry)—618(L)
Holton, W. C. (see Castner, Theodore, Jr.)—668
Hood, G. C. and C. A. Reilly. Ionization of strong electrolytes. VIII. Temperature coefficient of dissociation of strong acids by proton magnetic resonance—127
Hörl, Erwin M. (see Klein, Ralph)—307(L)
Hornig, D. F. (see Ferriso, C. C.)—1240
—— (see Haas, C.)—1763
Hoskins, R. H. (see Pastor, R. C.)—264
Hougen, Jon T. Anomalous Faraday dispersion of O_2—1122
Huber, W. (see Bär, F.)—470
—— (see Kuhn, H.)—467
Hudda, F. G. (see Ehrlich, Gert)—942(L)
Hunt, J. B. (see Agarwala, Umesh)—1567(L)
Hurst, R. P. (see Levelt, J. M. H.)—96
Hutchison, Clyde A., Jr., and Billy W. Magnum. Effect of deuterium substitution on the lifetime of the phosphorescent triplet state of naphthalene—1261(L)
——, **and Bernard Weinstock.** Paramagnetic resonance absorption in neptunium hexafluoride——56

Ibers, James A. Nuclear magnetic resonance study of polycrystalline NH_4ClO_4—1448
Ignatowski, Albert J. (see Mueller, Charles R.)—1430
Iijima, Takao (see Morino, Yonezo)—643
Illinger, Karl H. and Charles P. Smyth. Atomic polarization. I. Vibrational polarization of gases—787
Inghram, M. G. (see DeMaria, G.)—1373
—— (see Drowart, J.)—1366
Ito, Kazuo, Haruyuki Watanabe, and Masaji Kubo. Proton and B^{11} magnetic resonance of borazole—947(L)

Jackson, Jasper A., Joe F. Lemons, and Henry Taube. Nuclear magnetic resonance studies on hydration of cations—553
Jaffe, J. H. (see Hirshfeld, M. A.)—297(L)
James, Hubert M. and Thomas A. Keenan. Erratum: Theory of phase transitions in solid heavy methane—1877(L)
James, Thomas C. Rotation-vibration interaction in electronic transitions. Application to rotational "temperature" measurements—1770
——, **Wilfred G. Norris, and William Klemperer.** Infrared spectrum and dipole moment function of lithium hydride—728
Jameson, William J., Jr., and Henry Aroeste. Short-range interaction between a hydrogen molecule and a hydrogen atom. II—374
Jayadevappa, E. S. (see Hisatsune, I. C.)—565
Jen, C. K. (see Foner, S. N.)—963
Jennings, D. A. (see Bender, P. A.)—499
Jennings, L. D. (see Stanton, R. M.)—630(L)
—— (see Vossos, P. H.)—1590(L)
Jepsen, Donald W. and Joseph O. Hirschfelder. Calculation of the coupling terms neglected in performing the Born-Oppenheimer separation for the hydrogen molecule ion—1323
Jones, A. Russell. On the radiation-induced gas-phase polymerizations of acetylene and benzene—953(L)
Jones, Walter D. and F. L. Brooks, Jr. Evaluation of one-center electron repulsion integrals between certain s-type atomic orbitals—124
—— **and William T. Simpson.** Calculation of delocalization contribution to infrared intensity—1747
Joseph, R. I. and J. H. Van Vleck. Influence of dipole-dipole coupling on specific heat of a paramagnetic salt—1573(L)
Jursa, A. S. (see Tanaka, Y.)—1199, 1205

Kallmann, H. and M. Pope. Positive hole injection into organic crystals—300(L)
Kanda, Yoshiya (see Blackwell, Lawrence A.)—1465
Kaplan, Louis (see Hodnett, Ernest M.)—312(L)
Karle, I. L. Remarks on the electron scattering by iodine—617(L)
Karo, Arnold M. Electron-population analysis and the dipole moment of the $LiH\,^1\Sigma^+$ excited state—907
Kaskan, W. E. and R. C. Millikan. Source of green bands from boron-containing flames—1273(L)
Katz, Thomas J. and Herbert L. Strauss. ESR spectrum of the cyclooctatetraenyl radical anion—1873(L)
Kauder, Lois Nash (see Monse, E. U.)—1557
Kaufman, F. and J. R. Kelso. Catalytic effects in the dissociation of oxygen in microwave discharges—301(L)
Kawai, K. (see Stammreich, H.)—1482
Kearns, David R., Gordon Tollin, and Melvin Calvin. Electrical properties of organic solids. II. Effects of added electron acceptor on metal-free phthalocyanine—1020
—— (see Tollin, Gordon)—1013
Keck, James C. Variational theory of chemical reaction rates applied to three-body recombinations—1035
Keenan, Thomas A. (see James, Hubert M.)—1877(L)
Keffer, Frederic. Study of the wurtzite-type binary compounds. IV. Theory of double refraction—62
Kelso, J. R. (see Kaufman, F.)—301(L)
Kempter, Charles P. and M. R. Nadler. Thermal decomposition of niobium and tantalum monocarbides—1477
Keyes, Robert W. Volumes of activation. II. Pressure dependence of activation parameters—1066
Kiang, Hsiao S. (see Li, James C. M.)—1644
Kimel, S. (see Hirshfeld, M. A.)—297(L)
Kimura, Katsumi and Masao Kimura. Application of least-squares method to density-intensity calibration in electron diffraction studies—1398
—— **and Masaji Kubo.** Application of least-squares method to gaseous benzene in electron diffraction investigation—1776
Kimura, Masao (see Kimura, Katsumi)—1398
King, G. J., B. S. Miller, F. F. Carlson, and R. C. McMillan. Electron spin resonance of colloidal sodium in sodium azide—940(L)
Kirkwood, John G. (see Helfand, Eugene)—857
—— (see Stillinger, Frank H., Jr.)—1837
Kirsh, D. P. (see Waterman, T. E.)—304(L)
Kistiakowsky, G. B. (see Bayes, K. D.)—992
Kivelson, Daniel, E. Bright Wilson, Jr., and David R. Lide, Jr. Microwave spectrum, structure, dipole moment, and nuclear quadrupole effects in vinyl chloride—205
Klaboe, Peter and J. Rud Nielsen. Infrared and Raman spectra of fluorinated ethanes. XII. 1,1,2,2-tetrafluoroethane—899
Klein, Ralph and Erwin M. Horl. Isotope exchange processes in solid nitrogen under electron bombardment—307(L)
—— (see McNesby, James R.)—1814
Klemperer, William (see James, Thomas C.)—728
Knowles, C. Harry (see Lagemann, Robert T.)—561
Koertge, Noretta (see Piper, T. S.)—559
Konitzer, John D. and Jordan J. Markham. Experimental study of the shape of the F-band absorption in KCl—843

Kostkowski, H. J. (see Garvin, David)—880
Kowalewski, Valdemar J. and Dora G. de Kowalewski. Proton NMR spectra of the N,N-dimethylformamide, N-methylformamide, and N,N-dimethylacetamide—1272(L)
Krauss, M. (see Padgett, A.)—189
Krieger, Irvin M. and Paul J. Gans. First-order stochastic processes—247
Krimm, S. Approximate isotopic frequency rule and its application to the spectra of complex molecules—1780
—— Note on the infrared dichroism of axially oriented polymers—313(L)
Krisher, Lawrence C. and Louis Pierce. Second differences of moments of inertia in structural calculations: application to methyl-fluorosilane molecules—1619
Krishna, Bal and K. K. Srivastava. Experimental and theoretical aspects of Higasi's equation for a quick determination of electric dipole moment in solution—663
Kropf, Allen, Edward M. Eyring, Austin L. Wahrhaftig, and Henry Eyring. Mass spectrum of propane: isotope effect and metastable ions—149
Kruh, Robert F. (see Sharrah, Paul C.)—241
Krumholz, P. (see Stammreich, H.)—1482
Kubo, Masaji (see Ito, Kazuo)—947(L)
—— (see Kimura, Katsumi)—1776
Kuhn, H., W. Huber, G. Handschig, H. Martin, F. Schäfer, and F. Bär. Nature of the free electron model. The simple case of the symmetric polymethines—467
—— (see Bär, F.)—470
Kurata, Michio (see Yamakawa, Hiromi)—1852
Kuri, Zenichiro, Hisashi Ueda, and Shōji Shida. Effects of gases on irradiated polyvinyl chloride as studied by electron spin resonance—371
Kusumoto, Hazime, Ian J. Lawrenson, and H. S. Gutowsky. Proton magnetic resonance studies of some silicones—724
Kwei, George Hsing and R. F. Curl, Jr. Microwave spectrum of O^{18} formic acid and structure of formic acid—1592(L)
—— **and Dudley R. Herschbach.** Stark effect and dipole moment of CH_3CHF_2—1270(L)
Kyi, Ru-tao (see Axe, John D.)—1261(L)

Labes, Mortimer M., Robert Sehr, and Monisha Bose. Organic semiconductors. I. Some characteristics of the *p*-phenylenediamine-chloranil complex—1570(L)
Lagemann, Robert T. and C. Harry Knowles. Velocity of compressional waves in liquid hydrogen fluoride and some thermodynamic properties derived therefrom—561
Landauer, Rolf. Pyroelectric effect in the cubic ZnS structure—1784
Landgraf, W. C. (see Piette, L. H.)—1107
Langer, Sidney (see Wood, Scott E.)—1389
Laranjeira, M. F. (see de Vries, A. E.)—1714
Lassettre, Edwin N. (see White, David)—72
Laurie, Victor W. Microwave spectrum of *trans*-Crotononitrile—1588(L)
—— (see Norris, James A.)—1591(L)
Lawrenson, Ian J. (see Kusumoto, Hazime)—724
Lawson, A. W. Diffusion of impurities in amorphous polymers—131
——, **Stuart A. Rice, Roger D. Corneliussen, and Norman H. Nachtrieb.** On the dynamical theory of diffusion in crystals. III. Some mode calculations and relation to continuum theory—447
LeBlanc, F. J. (see Tanaka, Y.)—1199, 1205
Lebowitz, J. L. (see Reiss, Howard)—119
Lee, J. K., Burdon Musgrave, and F. S. Rowland. Intermolecular isotope effect in recoil tritium reactions with hydrogen—1266(L)
Lefebvre, Roland, Henry H. Dearman, and Harden M. McConnell. Spin densities in odd alternant hydrocarbon radicals—176
Lefever, R. A. and A. B. Chase. Substitutional incorporation of divalent iron in yttrium iron garnet—1575(L)
—— (see Wickersheim, K. A.)—271
Lehmann, Walter J., Charles O. Wilson, Jr., and I. Shapiro. Infrared spectra of alkyldiboranes. I. Monomethyldiboranes—1088
——, **Charles O. Wilson, Jr., and I. Shapiro.** Infrared spectra of alkyldiboranes. II. Monoethyldiboranes—1786
Lemons, Joe F. (see Jackson, Jasper A.)—553
Levelt, J. M. H. and R. P. Hurst. Quantum mechanical cell model of the liquid state. I—96
Li, James C. M. and Hsiao S. Kiang. Thermodynamic inequalities for elastic solids—1644
Lide, David R., Jr. Reply to "On the structure of trimethylamine-trimethylboron"—1570(L)
—— (see Kivelson, Daniel)—205
Lietzke, M. H. (see McCarroll, B.)—1277(L)
Lind, S. C. (see Rudolph, P. S.)—1572(L)
Lippincott, E. R., C. E. Weir, and A. Van Valkenburg. Infrared studies of dense forms of ice—612(L)
—— (see Powell, Francis X.)—1883(L)
Livingston, Ann (see Slutsky, L. J.)—1093
Livingston, Ralph (see Zeldes, Henry)—618(L)
Lombardi, E. and P. B. Sogo. NMR study of acetaldehyde-water mixtures—635(L)
Long, Maurice W. Centrifugal distortion in symmetric top molecules—948(L)
Loughran, E. Dan and Charles Mader. Appearance potential study of tetrafluorohydrazine—1578(L)
Lykos, Peter G. On the electron spin resonance spectra of hydrocarbon radicals—625(L)

Mackenzie, J. D. Structure of glass forming halides. I. Liquid beryllium fluoride—1150
Mader, Charles (see Loughran, E. Dan)—1578(L)
Maeda, Kōko (see Hayashi, Tarō—1568(L)
Magnasco, V. and C. Rossi. Statistics of isotactic deformable chains with interdependent internal rotations—1881(L)
Mahan, Bruce H. Perturbation of molecular distribution functions by chemical reaction—362
Mahlman, H. A. Hydrogen formation in the radiation chemistry of water—601
Maisch, William G. (see Vanderslice, Joseph T.)—515
Malm, John G. (see Weinstock, Bernard)—181
Mandel, Gerald and Frank C. Collins. Brownian motion in liquids—1796
Mangelsdorf, Paul C., Jr. Role of thermal diffusion in the electrolytic separation of isotopes in liquid metals—293
Mangum, Billy W. (see Hutchison, Clyde A. Jr.)—1261(L)
Mann, David E. (see White, David)—481, 488
Mann, Joseph B. (see Blais, Normand C.)—1459
Mannella, Gene (see Reeves, Robert R.)—632(L), 946(L)
Marcus, A. B. (see Cramer, W. H.)—186
Margolis, Jack S. (see Satten, Robert A.)—573
Margoninski, Y. Effect of chemical etches on the fast germanium surface states—1791
Margrave, John L. Ionization potentials of B_5H_9, B_5H_8I, $B_{10}H_{14}$, and $B_{10}H_{13}C_2H_5$ from electron impact studies—1889(L)
Markham, Jordan J. and Herbert N. Hersh. Optical absorption of *F* bands in thallium-doped potassium halides—1885(L)
—— (see Konitzer, John D.)—843
Martell, Arthur E. (see Nakamoto, Kazuo)—588
Martin, H. (see Bär, F.)—470
—— (see Kuhn, H.)—467

Martin, T. W. and C. E. Melton. Hydrogen atom abstraction reactions by cyanide ion-radicals—700
Maryott, A. A. and G. Birnbaum. Microwave absorption in compressed oxygen—686
——, **A. Estin, and G. Birnbaum.** Nonresonant absorption in symmetric-top gases: dependence of relaxation frequency on temperature—1501
Masland, Charles H., 3rd (see Wood, Scott E.)—1385
Mason, Edward A. Redetermination of the intermolecular potential for krypton—1832
—— (see Fallon, Robert J.)—698, 1453
—— (see Vanderslice, Joseph T.)—515
Matheson, Max S. and Leon M. Dorfman. Detection of short-lived transients in radiation chemistry—1870(L)
Matsen, F. A. (see Robinson, J. M.)—988
—— (see Silverman, J. N.)—1402
Matsugashita, Teikichi and Kenichi Shinohara. Electron spin resonance studies of the oxygen effect on irradiated polytetrafluoroethylene—954(L)
Matsushita, Sanjuro and Toshiko Nakata. Infrared absorption of zinc oxide and of adsorbed CO_2. I—982
McCall, David W. and Ernest W. Anderson. Dielectric properties of linear polyamides—237
—— **and Dean C. Douglass.** Self-diffusion in the primary alcohols—1876(L)
—— (see Gutowsky, H. S.)—548
McCarroll, B. and M. H. Lietzke. Indium sulfate: Raman spectra and incomplete dissociation—1277(L)
McClellan, A. L. On twisted organic crystals—1271(L)
McClure, F. T. (see Bird, J. F.)—1423
McConkey, Gladys (see Prock, Alfred)—224
McConnell, Harden M. (see Heller, Chonon)—1535
—— (see Lefebvre, Roland)—176
McEwen, K. Lenore. Electronic structures and spectra of nitromethane and nitrogen dioxide—1801
McGlynn, S. P., J. D. Boggus, and E. Elder. Energy transfer in molecular complexes. II. The anthracene-*sym*-trinitrobenzene complex—357
McGrath, J. W. (see Silvidi, A. A.)—924
McLachlan, A. D. Dangers of the "average energy approximation" in perturbation theory—1263(L)
—— Spin densities in dimesitylmethyl—1488
McLain, W. H. (see Rabinovitch, B. S.)—493
McLean, A. D. LCAO-MO-SCF ground state calculations on C_2H_2 and CO_2—1595(L)
——, **B. J. Ransil, and R. S. Mulliken.** Charge distribution, hybridization, and bonding in acetylene and carbon dioxide—1873(L)
McMillan, R. C. (see King, G. J.)—940(L)
McNesby, James R., Milton D. Scheer, and Ralph Klein. Isotope effect in the hydrogen atom-formaldehyde reaction—1814
McQuarrie, Donald A. (see Robinson, Dean W.)—556
Medlin, W. L. Comments on "Thermoluminescent properties of calcite"—943(L)
Meijer, G. (see Avinor, M.)—1456
Melton, C. E. and P. S. Rudolph. Mass spectrometric studies of ionic intermediates in the alpha-particle radiolysis of ethylene—1128
—— (see Martin, T. W.)—700
—— (see Rudolph, P. S.)—586
Merryman, P., C. M. Moser, and R. K. Nesbet. Lower excited electronic states of carbon monoxide—631(L)
Miller, B. S. (see King, G. J.)—940(L)
Millett, W. E. (see Hatcher, C. R.)—28
Millikan, R. C. (see Kaskan, W. E.)—1273(L)
Milne, Thomas A. Ion-molecule reactions in mass spectrometric studies of alkali halide salts—1275(L)
Mishuck, E. (see Chaiken, R. F.)—141
Miyagawa, Ichiro and Walter Gordy. Electron spin resonance of an irradiated single crystal of alanine; second-order effects in free radical resonances—255
Miyazawa, Tatsuo. Perturbation treatment of the characteristic vibrations of polypeptide chains in various configurations—1647
Mizushima, Masataka. Theory of microwave absorption by compressed oxygen gas—691
Moe, G. (see Chaiken, R. F.)—141
Monse, E. U., W. Spindel, Lois Nash Kauder, and T. I. Taylor. Enrichment of nitrogen-15 by chemical exchange of NO with liquid N_2O_3—1557
Moore, Walter J. (see Grønlund, Finn)—1540
Moore, William M., George S. Hammond, and Robert P. Foss. Photochemical evidence for triplet state quenching by paramagnetic species—1594(L)
Morino, Yonezo, Yasushi Nakamura, and Takao Iijima. Mean square amplitudes and force constants of tetrahedral molecules. I. Carbon tetrachloride and germanium tetrachloride—643
Morokuma, Keiji (see Fukui, Kenichi)—1743
Morrison, J. D. (see Dorman, F. H.)—378
Mortensen, Earl M. (see Smith, Richard P.)—502, 508
Moser, Carl M. (see Brion, Hélène)—1194
—— (see Merryman, P.)—631(L)
Mosher, Harry S., Clark Souers, and R. Hardwick. Photochromotropism of *gamma*-(2,4-dinitrobenzyl)-pyridine in solution—1888(L)
Motz, Hans and Henry Wise. Diffusion and heterogeneous reaction. III. Atom recombination at a catalytic boundary—1893(L)
Mueller, Charles R. and Albert J. Ignatowski. Equilibrium and transport properties of the carbon tetrachloride-methylene chloride system—1430
Mukherji, A. (see Sinha, S. K.)—1652
Muller, Norbert and Ronald C. Bracken. Microwave spectra and structure of H_3SiCN and D_3SiCn—1577(L)
Mulliken, R. S. (see McLean, A. D.)—1873(L)
Murrell, J. N. Construction of hybrid orbitals—767
Musgrave, Burdon (see Lee, J. K.)—1266(L)

Nachtrieb, Norman H. (see Lawson, A. W.)—447
Nadler, M. R. (see Kempter, Charles P.)—1477
Nagata, Chikayoshi (see Fukui, Kenichi)—1743
Nakada, Kazuo (see Hayashi, Tarō)—1568(L)
Nakagaki, Masayuki and Wilfried Heller. Theoretical investigations on the light scattering of colloidal spheres. VIII. Angular location of intensity maxima and minima in the radiation diagram of colloidal spheres—835
Nakamoto, Kazuo and Arthur E. Martell. Infrared spectra of metal-chelate compounds. I. A normal coordinate treatment on *bis*-(acetylacetonato)-Cu(II)—588
Nakamura, Yasushi (see Morino, Yonezo)—643
Nakata, Toshiko (see Matsushita, Sanjuro)—982
Nasuhoglu, R. and G. R. Ringo. Transmission measurements with cold neutrons in hydrogenous liquids—476
Negita, Hisao, P. A. Casabella, and P. J. Bray. N^{14} pure quadrupole resonances of acetonitrile and hydrocyanic acid—314(L)
Nesbet, R. K. Ground state electronic wave function of methane—1114
—— (see Merryman, P.)—631(L)
Newell, George S. (see Castner, Theodore, Jr.)—668
Nicholls, R. W. (see Broida, H. P.)—623(L)
Nicholson, A. J. C. (see Dorman, F. H.)—378
Nielsen, H. H. (see Hoffman, J. M.)—1597(L)
Nielsen, J. Rud (see Klaboe, Peter)—899
Norris, James A. and Victor W. Laurie. Energy levels of a slightly asymmetric top—1591(L)
Norris, Wilfred G. (see James, Thomas C.)—728

Ogawa, M. and Y. Tanaka. New emission bands of forbidden systems of nitrogen in the vacuum ultraviolet region—754
Ogryzlo, E. A. and H. I. Schiff. Electrically discharged CO_2 as a source of oxygen atoms—628(L)
Olsen, Douglas, A. (see Person, Willis B.)—1268(L)
Onak, Thomas P. and I. Shapiro. B^{11} nuclear magnetic resonance spectrum of the "diammoniate of diborane"—952(L)
Onsager, Lars (see Whitman, Donald R.)—67
O'Reilly, D. E. NMR chemical shifts of aluminum: experimental data and variational calculation—1007
Osborn, Richard K. Transport in dilute gases and chemical forces—1817
O'Toole, James T. and John S. Dahler. On the kinetic theory of a fluid composed of rigid spheres—1097
Overend, John and J. R. Scherer. Transferability of Urey-Bradley force constants. I. Calculation of force constants on a digital computer—1289
—— **and J. R. Scherer.** Transferability of Urey-Bradley force constants. II. Carbonyl halides and related molecules—1296
—— (see Scherer, James R.)—1720

Pace, E. L. (see Bockhoff, F. J.)—799
—— (see Dininny, R. E.)—805
Padgett, A. and M. Krauss. Electronic structure of CH_2 and CH_3—189
Paoletti, A. and S. J. Pickart. Study of rhombohedral V_2O_3 by neutron diffraction—308(L)
Papazian, Harold A. Nitrogen chained compounds as intermediates in the photolysis of solid HN_3—456
Parks, Joe M. and Robert G. Parr. Theory of electronic excitation and reorganization in the formaldehyde molecule—1657
Parr, Robert G. (see Parks, Joe M.)—1657
Pastor, R. C. and R. H. Hoskins. Paramagnetic resonance in charred dextrose—264
Pauncz, R. (see Ritter, Z.)—1820
Payne, Herbert. On the correlation correction to the Fermi-Thomas-Dirac equation—1589(L)
Pearson, Irving M. and Clifford S. Garner. Exchange of radiochlorine between hydrogen chloride and carbon tetrachloride. "Red form" of solid hydrogen chloride—1214
Penner, S. S. Radiant energy emission from excited harmonic oscillators—617(L)
Person, Willis B. and Douglas A. Olsen. Infrared studies of crystal benzene. III. Assignment of 705 cm^{-1} band and crystal splitting of ν_{11}—1268(L)
Petrella, R. V. (see Bockhoff, F. J.)—799
Petrus, Helen M. (see Fryburg, George C.)—622(L)
Petz, John I. (see Sharrah, Paul C.)—241
Peyron, M. (see Broida, H. P.)—1068
Phillips, David L. (see Fricke, Hugo)—1183
Pickart, S. J. (see Paoletti, A.)—308(L)
Pierce, Louis (see Krisher, Lawrence C.)—1619
Piette, L. H. and W. C. Landgraf. Steady-state studies by EPR on the photodissociation of some alkyl hydroperoxides—1107
Pimental, George C. (see Ewing, George E.)—927
—— (see Van Thiel, Mathias)—133
Piper, T. S. and Noretta Koertge. Simultaneous electronic and vibrational transitions in the spectra of hydrated nickel(II) ion—559
Pitzer, Kenneth S. (see Clementi, Enrico)—656
—— (see Sinanoğlu, Oktay)—1279
Plane, Robert A. (see Chantry, George W.)—319
Plante, Ernest R. (see Carter, E. David)—1269(L)
Platas, O. (see Silverman, J. N.)—1402
Plostnieks, Janis (see Saunders, Martin)—317(L)
Plyler, Earle K. (see Benedict, W. S.)—32
Pope, M. (see Kallmann, H.)—300(L)
Porter, Gerald B. Photooxidation of biacetyl—1587(L)
Porter, Richard F. and C. W. Spencer. Stabilities of the gaseous molecules, BiSe, BiTe, and SbTe—943(L)
Potter, Robert L. and Wouter Vanderkulk. Computation of the equilibrium composition of burnt gases—1304
Powell, Francis X. and Ellis R. Lippincott. Raman spectrum and structure of perchlorylfluoride—1883(L)
Prausnitz, J. M. (see Cairns, E. J.)—169
Prelesnik, A. (see Blinc, R.)—387
Prock, Alfred and Gladys McConkey. Inhomogeneous field method for the study of large polarizable particles—224

Rabinovitch, B. S., D. H. Dills, W. H. McLain, and J. H. Current. Unimolecular decomposition of chemically activated ethyl-d_2 radicals—493
—— (see Harrington, R. E.)—1245
—— (see Schlag, E. W.)—1599
Ragle, J. L. Nuclear quadrupole coupling in chlorite ion—403
Rank, D. H., W. B. Birtley, D. P. Eastman, and T. A. Wiggins. Pressure-induced shifts of HCl lines due to foreign gases—296(L)
——, **W. B. Birtley, D. P. Eastman, and T. A. Wiggins.** Pressure shifting of spectrum lines: some empirical generalizations—298(L)
Ransil, B. J. (see McLean, A. D.)—1873(L)
Rao, K. Narahari (see Hoffman, J. M.)—1597(L)
Rapp, Donald. Complete classical theory of vibrational energy exchange—735
Reams, Walter (see Adler, George)—1698
Reed, S. G. and C. M. Herzfeld. Theory of flame propagation in solid nitrogen at low temperatures—1
Reeves, L. W. (see Gray, Peter)—1878(L)
Reeves, Robert R., Gene Mannella, and Paul Harteck. Formation of excited NO and N_2 by wall catalysis—946(L)
——, **Gene Mannella, and Paul Harteck.** Rate of recombination of oxygen atoms—632(L)
Reilly, C. A. and J. D. Swalen. Nuclear magnetic resonance spectra of some simple epoxides—1378
—— (see Hood, G. C.)—127
Reisfeld, Renata (see Glasner, Abraham)—956(L)
Reiss, Howard, H. L. Frisch, E. Helfand, and J. L. Lebowitz. Aspects of the statistical thermodynamics of real fluids—119
Ricci, F. P. (see Cini-Castagnoli, G.)—19
Rice, O. K. Note on the equation of state for hard spheres—1277(L)
Rice, Stuart A. and Harry L. Frisch. Dynamical theory of diffusion in crystals. IV. Some aspects of the introduction of irreversibility—1026
—— (see Harris, Robert A.)—538
—— (see Helfand, Eugene)—1642
—— (see Lawson, A. W.)—447
Ringo, G. R. (see Nasuhoglu, R.)—476
Ritter, Z. and R. Pauncz. Approximate analytical wave functions for the $1sns\ ^1S$ states of He and He-like ions—1820
Roberts, R. W. (see Greene, E. F)—940(L)
Robinson, Dean W. and Donald A. McQuarrie. Far infrared spectra of some symmetric top molecules—556
Robinson, J. M., J. D. Stuart, and F. A. Matsen. Electronic structure of LiH. V. A radially correlated wave function—988
Romanow, W. J. (see Brady, George W.)—306(L)
Rosen, Gerald. Burning rates of solid propellants—89
—— Generalization of the laminar flame action principle for Arrhenius-type functions—311(L)
Ross, J. (see Greene, E. F.)—940(L)
Rossi, C. (see Magnasco, V.)—1881(L)
Roth, Etienne G. and Jacob Bigeleisen. Vapor pressures of the neon isotopes—612(L)
Roth, Walter. Reply to "Luminosity of shock waves in xenon"—1876(L)

Rowland, F. S. (see Lee, J. K.)—1266(L)
Rubin, Robert J. (see Herman, Robert)—1393
Rudolph, P. S. and S. C. Lind. Alpha radiolysis of CO with and without Xe—1572(L)
—— **and C. E. Melton.** Ion-molecule charge transfer reactions in the alpha radiolysis of various hydrocarbons in a mass spectrometer—586
—— (see Melton, C. E.)—1128
Rundle, R. E. (see Atjoi, Masao)—627(L)
—— (see Vossos, P. H.)—1590(L)

Sadô, Akira (see Anno, Tosinobu)—619(L), 1602, 1611
Salomon, R. E., W. M. Graven, and G. B. Adams, Jr. Ultraviolet absorption spectra of anodic zirconium oxide films—310(L)
Satten, Robert A. and Jack S. Margolis. f^2 configuration in a crystalline field—573
Sauer, Myran C., Jr. (see Dorfman, Leon M.—1886(L)
Saunders, Martin, Janis Plostnieks, Peter S. Wharton, and Harry H. Wasserman. NMR studies on 1-methoxyvinyl esters—317(L)
—— (see Whitman, Donald R.)—67
Schaefer, T. and W. G. Schneider. On the nature of solvent effects in the proton resonance spectra of unsaturated ring compounds. I. Substituted benzenes—1218
—— **and W. G. Schneider.** On the nature of solvent effects in the proton resonance spectra of unsaturated ring compounds. II. Heterocyclic compounds—1224
—— (see Buckingham, A. D.)—1227
Schäfer, F. (see Kuhn, H.)—467
Schatz, Paul N. Infrared dispersion measurements and integrated absorption coefficients for pure liquid benzene—894
Scheer, Milton D. (see McNesby, James R.)—1814
Scherer, James R. and John Overend. Transferability of Urey-Bradley force constants. III. Vinylidene halides—1720
—— (see Overend, John)—1289, 1296
Scherr, Charles W. and Jeremiah N. Silverman. Simple configuration-interaction wave functions. II. Two-electron ions: an analytic study—1407
Schiff, H. I. (see Ogryzlo, E. A.)—628(L)
Schissel, Paul O. (see Searcy, Alan W.)—957(L)
Schlag, E. W., B. S. Rabinovitch, and F. W. Schneider. Comparison of n and s as fall-off parameters in the Slater and Rice-Ramsperger-Kassel classical theories of unimolecular reaction—1599
Schneider, F. W. (see Schlag, E. W.)—1599
Schneider, Jürgen. Dielectric relaxation of dilute solutions in the millimeter wave region—665
Schneider, W. G. (see Buckingham, A. D.)—1227
—— (see Schaefer, T.)—1218, 1224
Schnepp, O. and K. Dressler. Photolysis of ammonia in a solid matrix at low temperatures—1682
Schoen, L. J. and H. P. Broida. Spectra emitted from rare gas-oxygen solids during electron bombardment—1184
Schott, Garry L. Kinetic studies of hydroxyl radicals in shock waves. III. The OH concentration maximum in the hydrogen-oxygen reaction—710
Schreurs, Jan W. H., George E. Blomgren, and George K. Fraenkel. Anomalous relaxation of hyperfine components in electron spin resonance—1861
Schultz, R. D. (see Chaiken, R. F.)—141
Searcy, Alan W., Wendell S. Williams, and Paul O. Schissel. Use of constant-boiling systems in calibration of mass spectrometers and other molecular beam instruments—957(L)
Sears, Gerald W. Dislocation etchings—1317
—— **and R. C. DeVries.** Nucleation of alumina at high supersaturations and subsequent recrystallization—93
Sehr, Robert (see Labes, Mortimer M.)—1570(L)
Shapiro, I. (see Lehmann, Walter J.)—1088, 1786
—— (see Onak, Thomas P.)—952(L)
Sharrah, Paul C., John I. Petz, and Robert F. Kruh. Determination of atomic distributions in liquid lead-bismuth alloys by neutron and x-ray diffraction—241
Shida, Shōji (see Hayashi, Tarō)—1568(L)
—— (see Kuri, Zenichiro)—371
—— **(see Yamazaki, Hideo)—950(L)**
Shimanouchi, T. (see Suzuki, I.)—1263(L)
Shimizu, Hiroshi (see Fujiwara, Shizuo)—1636
Shinohara, Kenichi (see Matsugashita, Teikichi)—954(L)
Shirane, G. (see Subbarao, E. C.)—1846
Shuler, Kurt E. Relaxation of an isolated ensemble of harmonic oscillators—1692
Siegel, Seymour, Lillian H. Baum, Sol Skolnik, and John M. Flournoy. Observations of the thermal behavior of radicals in gamma-irradiated ice—1249
Silver, A. H. Nuclear magnetic resonance in B_2O_3—H_2O glasses and boric acids—959
—— **and P. J. Bray.** NMR study of bonding in some solid boron compounds—288
Silverman, Jeremiah N., O. Platas, and F. A. Matsen. Simple configuration-interaction wave functions. I. Two-electron ions: a numerical study—1402
—— (see Scherr, Charles W.)—1407
Silvidi, A. A. and J. W. McGrath. Proton magnetic resonance study of the structure of barium chloride dihydrate—924
Simpson, William T. (see Jones, Walter D.)—1747
Sinanoğlu, Oktay and Kenneth S. Pitzer. Interactions between molecules adsorbed on a surface—1279
—— (see Berg, Robert A.)—1082
Singer, L. A. (see Wexler, S.)—417
Sinha, S. K. and A. Mukherji. Nuclear magnetic shielding in molecules: hydrogen molecule—1652
Skolnik, Sol (see Siegel, Seymour)—1249
Slichter, C. P. (see Castner, Theodore, Jr.)—668
Slutsky, L. J. and Ann Livingston. Lattice dynamics and heat capacity of indium—1093
Smith, Richard P. and Earl M. Mortensen. Bond and molecular polarizability tensors. I. Mathematical treatment of bond tensor additivity—502
—— **and Earl M. Mortensen.** Bond and molecular polarizability tensors. II. Discussion of values of polarizability parameters for some single bond involving carbon—508
Smyth, Charles. P. (see Illinger, Karl H.)—787
Snider, Robert F. Quantum mechanical modified Boltzmann equation for degenerate internal states—1051
Soden, R. R. (see Van Uitert, L. G.)—1161, 1687
Sogo, P. B. (see Lombardi, E.)—635(L)
Sommer, Armin (see White, David)—481, 488
Souers, Clark (see Mosher, Harry S.)—1888(L)
Spedding, F. H. (see Stanton, R. M.)—630(L)
Spence, R. D. and J. A. Cowen. Concentration dependence of the polarization and relaxation time of Al^{27} nuclei in ruby—624(L)
Spencer, C. W. (see Porter, Richard F.)—943(L)
Spindel, W. and Marvin J. Stern. Some observations on atomic exchange in NO—1579(L)
—— (see Monse, E. U.)—1557
Sponer, H. (see Blackwell, Lawrence A.)—1465
Srivastava, B. N. and A. K. Barua. Thermal conductivity of binary mixtures of diatomic and monatomic gases—427
Srivastava, K. K. (see Krishna, Bal)—663
Stammreich, H., K. Kawai, Yara Tavares, P. Krumholz, J. Behmoiras, and S. Bril. Raman spectra of metal carbonyl compounds. II. Raman spectra, structure, and force constants of cobalt and iron tetracarbonylate anions—1482
Stanton, R. E. Electron capture by neutral molecules—1348

Stanton, R. M., L. D. Jennings, and F. H. Spedding. Heat capacity of terbium from 1.4 to 4.0° Kelvin—630(L)
Stapleton, H. J. (see Axe, John D.)—1261(L)
Steiner, R. F. Hydrogen ion titration curve of a polynucleotide capable of undergoing a helix-coil transition—215
Stephen, Michael J. and George K. Fraenkel. Theory of saturation in electron spin resonance spectra—1435
Stern, Marvin J. (see Spindel, W.)—1579(L)
Stewart, James E. Out-of-plane vibrations of molecules containing planar XY_4 rings. I. The normal vibration problem—1165
Stillinger, Frank H., Jr., John G. Kirkwood, and Peter J. Wojtowicz. Theory of fused salts—1837
Stone, F. G. A. (see Coyle, T. D.)—1892(L)
Stranathan, J. D. (see Beeler, J. R., Jr.)—442
Straumanis, M. E. and T. Ejima. Soundness of the lattice of zone-refined aluminum—629(L)
Strauss, Herbert L. (see Katz, Thomas J.)—1873(L)
Stuart, J. D. (see Robinson, J. M.)—988
Subbarao, E. C. and G. Shirane. Nonstoichiometry and ferroelectric properties of $PbNb_2O_6$-type compounds—1846
Sundaram, S. and Forrest F. Cleveland. Potential energy constants, rotational distortion constants, and thermodynamic properties of $B^{11}H_3CO$, $B^{11}D_3CO$, $B^{10}H_3CO$, and $B^{10}D_3CO$—166
—— **and Forrest F. Cleveland.** Potential energy constants, rotational distortion constants, and thermodynamic properties of $H_2C=C=O$ and $D_2C=C=O$—1554
——, **Frank Suszek, and Forrest F. Cleveland.** Potential energy constants, rotational distortion constants, and thermodynamic properties for NH_3, ND_3; PH_3, PD_3; AsH_3, and AsD_3—251
Suszek, Frank (see Sundaram, S.)—251
Suzuki, I., M. Tsuboi, and T. Shimanouchi. Solvent effect on the infrared absorptions of N-methylacetamide in the region of the NH stretching frequency—1263(L)
Suzuki, Satoshi (see Baba, Hiroaki)—1706
Swalen, J. D. (see Reilly, C. A.)—1378

Takeyama, H. and A. Guttman. Emission of diffuse bands of sodium behind shock fronts—634(L)
Tanaka, Y., A. S. Jursa, and F. J. LeBlanc. Higher ionization potentials of linear triatomic molecules. I. CO_2—1199
——, **A. S. Jursa, and F. J. LeBlanc.** Higher ionization potentials of linear triatomic molecules. II. CS_2, COS, and N_2O—1205
—— (see Ogawa, M.)—754
Tanenbaum, M. Calculation of the heat of solution of copper in germanium from diffusion measurements—1126
Tanttila, W. H. (see Bender, P. A.)—499
Taube, Henry (see Agarwala, Umesh)—1567(L)
—— (see Jackson, Jasper A.)—553
Tavares, Yara (see Stammreich, H.)—1482
Taylor, T. I. (see Monse, E. U.)—1557
Taylor, William J. Dimensions of long-chain molecules with restricted internal rotation and variable bond length and angle—146
Templeton, David H. and Carol H. Dauben. Polarized octahedra in barium tetratitanate—1515
Thacher, Henry C., Jr. Rational approximations for the Debye functions—638(L)
Thompson, Warren E. (see Ewing, George E.)—927
Tidwell, E. D. (see Benedict, W. S.)—32
Tinoco, Ignacio, Jr., and Robert W. Woody. Optical rotation of oriented helices. II. Calculation of the rotatory dispersion of the alpha helix—461
Tollin, Gordon, David R. Kearns, and Melvin Calvin. Electrical properties of organic solids. I. Kinetics and mechanism of conductivity of metal-free phthalocyanine—1013
—— (see Kearns, David R.)—1200
Townsend, M. G. and S. I. Weissman. Possible symptom of the Jahn-Teller effect in the negative ions of coronene and triphenylene—309(L)
Traetteberg, M. (see Almenningen, A.)—616(L)
Trammell, G. T. (see Zeldes, Henry)—618(L)
Treanor, Charles E. and Walter H. Wurster. Measured transition probabilities for the Schumann-Runge system of oxygen—758
Treuting, R. G. (see Van Uitert, L. G.)—322
Tsuboi, M. (see Suzuki, I.)—1263(L)
Tuttle, T. R., Jr. Spin distribution in naphthalene negative ion—1579(L)

Ueda, Hisashi (see Kuri, Zenichiro)—371

Vanderkulk, Wouter (see Potter, Robert L.)—1304
Vanderslice, Joseph T., Edward A Mason, and William G. Maisch. Interactions between ground state oxygen atoms and molecules: O—O and O_2—O_2—515
—— (see Fallon, Robert J.)—698,1453
Van Thiel, Mathias and George C. Pimentel. Matrix isolation studies: infrared spectra of intermediate species in the photolysis of hydrazoic acid. II—133
Van Uitert, L. G. and R. R. Soden. Emission spectra of trivalent terbium—1161
—— **and R. R. Soden.** Multiple emission spectra of trivalent europium in the Scheelite structure—1687
—— **and R. G. Treuting.** Growth and crystal symmetry of metal chelate salt crystals—322
Van Valkenburg, A. (see Lippincott, E. R.)—612(L)
Van Vleck, J. H. (see Joseph, R. I.)—1573(L)
Verma, R. D. Ultraviolet resonance spectrum of the iodine molecule—738
von Hoene, J. and W. M. Hickam. Electron attachment in $C_3F_{16}O$—876
Vossos, P. H., L. D. Jennings, and R. E. Rundle. Structure and magnetic properties of $LiCuCl_3 \cdot 2H_2O$—1590(L)

Wahrhaftig, Austin L. (see Kropf, Allen)—149
Waite, Thomas R. Bimolecular reaction rates in solids and liquids—21
Walker, R. E., N. deHaas, and A. A. Westenberg. Measurements of multicomponent diffusion coefficients for the CO_2-He-N_2 system using the point source technique—1314
—— **and A. A. Westenberg.** Molecular diffusion studies in gases at high temperature. IV. Results and interpretation of the CO_2–O_2, CH_4–O_2, H_2–O_2, CO–O_2, and H_2O–O_2 systems—436
Walsh, Patrick N. (see White, David)—481, 488
Ward, Raymond L. C^{13} hyperfine splitting in benzonitrile negative ion—1592(L)
—— Electron spin resonance studies of the potassium salt of *m*-dinitrobenzene negative ion—410
Wasserman, Harry H. (see Saunders, Martin)—317(L)
Watanabe, Haruyuki (see Ito, Kazuo)—947(L)
Waterman, T. E., D. P. Kirsh, and R. I. Brabets. Thermal conductivity of liquid ozone—304(L)
Weinstock, Bernard, Howard H. Claassen, and John G. Malm. Vibrational spectra of OsF_6 and PtF_6—181
—— (see Hutchison, Clyde A., Jr)—56
Weir, C. E. (see Lippincott, E. R.)—612(L)
Weissman, S. I. (see Townsend, M. G.)—309(L)
Weissman, Stanley and Scott E. Wood. Vapor-liquid equilibrium of benzene-2,2,4-trimethylpentane mixtures—1153
Westenberg, A. A. (see Walker, R. E.)—436, 1314
Wexler, S., G. R. Anderson, and L. A. Singer. Isomeric effects in fragmentation by beta decay: monotritiated propanes and toluenes—417

Whan, R. E. (see Crosby, G. A.)—614(L)
Wharton, Peter S. (see Saunders, Martin)—317(L)
White, David and Edwin N. Lassettre. Theory of ortho-para hydrogen separation by adsorption at low temperatures, isotope separation—72
——, **David E. Mann, Patrick N. Walsh, and Armin Sommer.** Infrared emission spectra of gaseous B_2O_3 and B_2O_2—481
——, **David E. Mann, Patrick N. Walsh, and Armin Sommer.** Infrared emission spectrum of gaseous HBO_2—488
Whitman, Donald R., Lars Onsager, Martin Saunders, and Hubert E. Dubb. Proton magnetic resonance spectrum of propane—67
Wickersheim, K. A., R. A. Lefever, and B. M. Hanking. Infrared absorption spectrum of the silicate ion in the garnet structure—271
Widom, B. Rotational relaxation of rough spheres—913
Wiggins, T. A. (see Rank, D. H.)—296(L), 298(L)
Wildi, Bernard S. (see Epstein, A.)—324
Wiley, John S. (see Anderson, Scott)—949(L)
Wilkinson, P. G. Forbidden band systems in nitrogen. III. The $Y\ ^3\Sigma_u^- \leftarrow X\ ^1\Sigma_g^+$ system—1061
Williams, Dudley (see Cox, Henry L., Jr.)—633(L)
Williams, Richard. Becquerel photovoltaic effect in binary compounds—1505
Williams, Wendell S. (see Searcy, Alan W.)—957(L)
Wilson, Charles O., Jr. (see Lehmann, Walter J.)—1088, 1786
Wilson, David J. (see Buff, Frank P.)—677
Wilson, E. Bright, Jr. (see Kivelson, Daniel)—205
Wise, Henry (see Motz, Hans)—1893(L)
Wiseman, G. G. (see Beeler, J. R., Jr.)—442
Wishnia, Arnold. Proton relaxation times in protein complexes of paramagnetic ions—871
Woermann, D. (see Debye, P.)—939(L)
Wojtowicz, Peter J. (see Stillinger, Frank H., Jr.)—1837
Wong, Eugene Y. Paramagnetic resonance of Ti^{3+}, Cr^{3+}, and Fe^{3+} in $AlCl_3 \cdot 6H_2O$—598
Wood, Robert H. Madelung constant for K_2SO_4(II)—1690
Wood, Scott E., Sidney Langer, and Rubin Battino. Refractive index and dispersion of the benzene-methanol system—1389
—— **and Charles H. Masland, 3rd.** Refractive index and dispersion of the benzene-carbon tetrachloride system—1385
—— (see Weissman, Stanley)—1153
Woody, Robert W. (see Tinoco, Ignacio, Jr.)—461
Woolley, Harold W. Empirical intermolecular potential for inert gas atoms—405
Wurster, Walter H. (see Treanor, Charles E.)—758
Wybourne, B. G. Analysis of the solid-state spectra of trivalent neodymium and erbium—639

Yamakawa, Hiromi and Michio Kurata. Theory of dilute polymer solution. III. Heterogeneous polymer—1852
Yamazaki, Hideo and Shōji Shida. Radiolysis and bond stability of squalane—950(L)
Yang, Kang. Possible ion-molecule reaction in the gamma radiolysis of C_3 hydrocarbons—1892(L)
—— (see Gant, Preston L.)—1757
Yonezawa, Teijiro (see Fukui, Kenichi)—1743
Yoshino, Tsuneo. Difference of upper and lower state rotational constants of symmetrical-top molecules from infrared intensity measurement—1574(L)
Young, R. A. and K. C. Clark. Excitation of the auroral green line in nitrogen afterglows—607
—— **and K. C. Clark.** Vibrational distribution in late nitrogen afterglows—604

Zeldes, Henry, G. T. Trammell, Ralph Livingston, and R. W. Holmberg. Common error made in treating hyperfine effects in electron paramagnetic resonance studies of free radicals—618(L)
Ziebland, H. Some remarks on the paper "Thermal conductivity of liquid ozone" by T. E. Waterman, D. P. Kirsh, and R. I. Brabets—303(L)
Zijderveld, G. R. D. (see Dymanus, A.)—717
Zwanzig, Robert W. Collision of a gas atom with a cold surface—1173
Zwicker, E. F. (see Grossweiner, L. I.)—305(L)

Analytical Subject Index to Volume 32

(References with (L) are to Letters to the Editor)

Absorption Spectra, Infrared

Absolute infrared intensities of the ammonium ion in crystals, C. C. Ferriso and D. F. Hornig—1240

Calculation of delocalization contribution to infrared intensity, Walter D. Jones and William T. Simpson—1747

Determination of the dipole moment function from infrared band intensities of diatomic molecules, Robert Herman and Robert J. Rubin—1393

Difference of the upper and lower state rotational constants of symmetrical top molecules from infrared intensity measurement, Tsuneo Yoshino—1574(L)

Far infrared spectra of some symmetric-top molecules, Dean W. Robinson and Donald A. McQuarrie—556

Infrared absorption of zinc oxide and of adsorbed CO_2. I, Sanjuro Matsushita and Toshiko Nakata—982

Infrared absorption spectrum of the silicate ion in the garnet structure, K. A. Wickersheim, R. A. Lefever, and B. M. Hanking—271

Infrared and Raman spectra of fluorinated ethanes. XII. 1,1,2,2-Tetrafluoroethane, Peter Klaboe and J. Rud Nielsen—899

Infrared detection of the formyl radical, HCO, George E. Ewing, Warren E. Thompson, and George C. Pimentel—927

Infrared dispersion measurements and integrated absorption coefficients for pure liquid benzene, Paul N. Schatz—894

Infrared spectra of alkyldiboranes. I. Monomethyldiboranes, Walter J. Lehmann, Charles O. Wilson, Jr., and I. Shapiro—1087

Infrared spectra of alkyldiboranes. II. Monoethyldiboranes, Walter J. Lehmann, Charles O. Wilson, Jr., and I. Shapiro—1786

Infrared spectra of metal-chelate compounds. I. A normal coordinate treatment on *bis*-(acetylacetonato)-Cu(II) Kazuo Nakamoto and Arthur E. Martell—588

Infrared spectrum and dipole moment function of lithium hydride, Thomas C. James, Wilfred G. Norris, and William Klemperer—728

Infrared studies of crystal benzene. III. Assignment of the 705-cm^{-1} band and the crystal splitting of ν_{11}, Willis B. Person and Douglas A. Olsen—1268(L)

Infrared studies of dense forms of ice, E. R. Lippincott, C. E. Weir, and A. Van Valkenburg—612(L)

K-type doubling in phosphine, J. M. Hoffman, H. H. Nielsen, and K. Narahari Rao—1597(L)

Matrix isolation studies: Infrared spectra of intermediate species in the photolysis of hydrazoic acid. II, Mathias Van Thiel and George C. Pimentel—133

Pressure-induced shifts of HCl lines due to foreign gases, M. A. Hirshfeld, J. H. Jaffe, and S. Kimel—297(L)

Pressure-induced shifts of HCl lines due to foreign gases, D. H. Rank, W. B. Birtley, D. P. Eastman, and T. A. Wiggins—296(L)

Pressure shifting of spectrum lines: Some empirical generalizations, D. H. Rank, W. B. Birtley, D. P. Eastman, and T. A. Wiggins—300(L)

Solvent effect on the infrared absorptions of N-methylacetamide in the region of the NH stretching frequency, I. Suzuki, M. Tsuboi, and T. Shimanouchi—1263(L)

Study of infrared reflection spectrum of liquid C_6H_6, David A. Dows and J. L. Hollenberg—1581(L)

Vibrational intensities of benzene in the liquid phase, I. C. Hisatsune and E. S. Jayadevappa—565

Vibrational spectra of OsF_6 and PtF_6, Bernard Weinstock, Howard H. Claassen, and John G. Malm—181

Absorption Spectra, Microwave

Microwave absorption in compressed oxygen, A. A. Maryott and G. Birnbaum—686

Microwave spectra and structure of H_3SiCN and D_3SiCN, Norbert Muller and Ronald C. Bracken—1577(L)

Microwave spectrum and molecular structure of formamide, C. C. Costain and J. M. Dowling—158

Microwave spectrum and molecular structure of monochloroacetonitrile, Jack D. Graybeal—1258

Microwave spectrum of O^{18} formic acid and the structure of formic acid, George Hsing Kwei and R. F. Curl, Jr.—1592(L)

Microwave spectrum of *trans*-crotononitrile, Victor W. Laurie—1588(L)

Microwave spectrum, structure, dipole moment, and nuclear quadrupole effects in vinyl chloride, Daniel Kivelson, E. Bright Wilson, Jr., and David R. Lide, Jr.—205

New method for the measurement of integrated microwave line intensities and line widths, A. Dymanus, H. A. Dijkerman, and G. R. D. Zijderveld—717

Stark effect and dipole moment of CH_3CHF_2, George H. Kwei and Dudley R. Herschbach—1270(L)

Theory of microwave absorption by compressed oxygen gas, Masataka Mizushima—691

Absorption Spectra of Crystals

Absolute infrared intensities of the ammonium ion in crystals, C. C. Ferriso and D. F. Hornig—1240

Analysis of the solid-state spectra of trivalent neodymium and erbium, B. G. Wybourne—639

Crystal field splitting of energy levels of thulium ethylsulfate, John B. Gruber and John G. Conway—1532

Effect of pressure on color centers in Ag^+-doped alkali halides, R. A. Eppler and H. G. Drickamer—1734

Effect of pressure on the spectra of color centers, R. A. Eppler and H. G. Drickamer—1418

Electronic energy levels and crystal quantum states of Tm (IV), John B. Gruber and John G. Conway—1177

Electronic states of *p*-benzoquinone. V. Vibrational analysis of the vapor absorption spectrum around 4500-A region, Tosinobu Anno and Akira Sadô—1602

Experimental study of the shape of the *F* band absorption in KCl, John D. Konitzer and Jordan J. Markham—843

f^2 configuration in a crystalline field, Robert A. Satten and Jack S. Margolis—573

Infrared studies of crystal benzene. III. Assignment of the 705-cm^{-1} band and the crystal splitting of ν_{11}, Willis B. Person and Douglas A. Olsen—1268(L)

Inter- and intramolecular potentials and the spectrum of ice, C. Haas and D. F. Hornig—1763

Mechanism for the optical absorption in some paramagnetic salts, Robert Englman—298(L)

Optical absorption of *F* bands in thallium-doped potassium halides, Jordan J. Markham and Herbert N. Hersh—1885(L)

Simultaneous electronic and vibrational transitions in the spectra of hydrated nickel (II) ion, T. S. Piper and Noretta Koertge—559

Spectrum of K_2ReCl_6, J. C. Eisenstein—1887(L)

Absorption Spectra, Visible or Ultraviolet

Absorption spectra of mercury, bismuth, and antimony halides in pressed alkali halide disks, Abraham Glasner and Renata Reisfeld—956(L)
Crystal spectra of metal coordination compounds. I. Tetrahedral cobalt (II), J. Ferguson—528
Crystal spectra of metal coordination compounds. II. The violet form of $CoPy_2Cl_2$ and $CoCl_2 \cdot 6H_2O$, J. Ferguson—533
Effect of pressure on color centers in Ag^+-doped alkali halides, R. A. Eppler and H. G. Drickamer—1734
Electronic energy levels and crystal quantum states of Tm (IV), John B. Gruber and John G. Conway—1177
Electronic interaction in the free-electron network model for conjugated systems. III. Spectra of hydrocarbons other than even alternants, Norman S. Ham—1445
Electronic states of *p*-benzoquinone. V. Vibrational analysis of the vapor absorption spectrum around 4500-Å region, Tosinobu Anno and Akira Sadô—1602
Electronic states of *p*-benzoquinone. VI. Molecular geometry in the excited electronic state of 4500-Å absorption system as derived from Franck-Condon principle, Tosinobu Anno and Akira Sadô—1611
Electronic structure and spectrum of acetanilide, Hiroaki Baba and Satoshi Suzuki—1706
Experimental study of the shape of the *F* band absorption in KCl, John D. Konitzer and Jordan J. Markham—843
Forbidden band systems in nitrogen. III. The $Y\,{}^3\Sigma_u^- \leftarrow X\,{}^1\Sigma_g^+$ system in absorption, P. G. Wilkinson—1061
Higher ionization potentials of linear triatomic molecules I. CO_2, Y. Tanaka, A. S. Jursa, and F. J. LeBlanc—1199
Higher ionization potentials of linear triatomic molecules. II. CS_2, COS, and N_2O, Y. Tanaka, A. S. Jursa, and F. J. LeBlanc—1205
Measured transition probabilities for the Schumann-Runge system of oxygen, Charles E. Treanor and Walter H. Wurster—758
Photodissociation in the Schumann-Runge system of oxygen, D. W. O. Heddle—1889(L)
Rotation-vibration interaction in electronic transitions. Application to rotational "temperature" measurements, Thomas C. James—1770
Simultaneous electronic and vibrational transitions in the spectra of hydrated nickel (II) ion, T. S. Piper and Noretta Koertge—559
Ultraviolet absorption spectra of anodic zirconium oxide films, R. E. Salomon, W. M. Graven and G. B. Adams, Jr.—310(L)

Accommodation Coefficients

Collision of a gas atom with a cold surface, Robert W. Zwanzig—1172

Adsorption (see Surface Phenomena)

Theory of ortho-para hydrogen separation by adsorption at low temperatures, isotope separation, David White and Edwin N. Lassettre—72

Beams, Atomic and Molecular

Extended theory of sputtering, Don E. Harrison, Jr.—1336
Sputtering of silver by light ions with energies from 2 to 12 kev, Finn Grønlund and Walter J. Moore—1540
Variation of a chemical reaction cross section with energy, E. F. Greene, R. W. Roberts, and J. Ross—940(L)

Catalysis

Diffusion and heterogeneous reaction. III. Atom recombination at a catalytic boundary, Hans Motz and Henry Wise—1893(L)

Chemical Reactions (see Kinetics of Reactions)

Crystal Growth

Growth and crystal symmetry of metal chelate salt crystals, L. C. Van Uitert and R. G. Treuting—322
On twisted organic crystals, A. L. McClellan—1271(L)
Zone refining and chemical analysis of KCl and KBr, Scott Anderson, John S. Wiley, and Lloyd J. Hendricks—949(L)

Crystalline State

Becquerel photovoltaic effect in binary compounds, Richard Williams—1505
Comments on "Thermoluminescent properties of calcite," W. L. Medlin—943(L)
Diffusion of cadmium in pure and cadmium-doped AgBr, J. E. Hanlon—1492
Dislocation etching, Gerald W. Sears—1317
Effect of chemical etches on the fast germanium surface states, Y. Margoninski—1791
Effect of pressure on color centers in Ag^+-doped alkali halides, R. A. Eppler and H. G. Drickamer—1734
Intermolecular coupling of vibrations in molecular crystals, David A. Dows—1342
Madelung constant for K_2SO_4 (II), Robert H. Wood—1690
Microwave dielectric measurements in a liquid crystal that shows polymesomorphism, E. F. Carr—620(L)
Nuclear magnetic resonance study of polycrystalline NH_4ClO_4, James A. Ibers—1448
Nuclear quadrupole coupling in the alums, Gerald Burns—1585(L)
Optical absorption of *F* bands in thallium-doped potassium halides, Jordan J. Markham and Herbert N. Hersh—1885(L)
Pyroelectric effect in the cubic ZnS structure, Rolf Landauer—1784
Soundness of the lattice of zone-refined aluminum, M. E. Straumanis and T. Ejima—629(L)
Study of the Wurtzite-type binary compounds. IV. Theory of double refraction, Frederic Keffer—62
Substitutional incorporation of divalent iron in yttrium iron garnet, R. A. Lefever and A. B. Chase—1575(L)
Thermal decomposition of niobium and tantalum monocarbides, Charles P. Kempter and M. R. Nadler—1477

Crystal Structure

Neutron diffraction study on sodium tungsten bronzes Na_xWO_3 (x=0.9~0.6), Masao Atoji and R. E. Rundle—627(L)
Nonstoichiometry and ferroelectric properties of $PbNb_2O_6$-type compounds, E. C. Subbarao and G. Shirane—1846
Polarized octahedra in barium tetratitanate, David H. Templeton and Carol H. Dauben—1516
Proton magnetic resonance study of the structure of barium chloride dihydrate, A. A. Silvidi and J. W. McGrath—924
Structure and magnetic properties of $LiCuCl_3 \cdot 2H_2O$, P. H. Vossos, L. D. Jennings, and R. E. Rundle—1590(L)

Detonation (see also Shock Waves)

Detonation pressure of liquid TNT, W. B. Garn—653
Effect of solid propellant compressibility on combustion instability, J. F. Bird, L. Haar, R. W. Hart, and F. T. McClure—1423

Deuterium (see Isotopes)

Dielectrics

Atomic polarization. I. Vibrational polarization of gases, Karl H. Illinger and Charles P. Smyth—787

Dielectrics (continued)

Bond and molecular polarizability tensors. I. Mathematical treatment of bond tensor additivity, Richard P. Smith and Earl M. Mortensen—502
Bond and molecular polarizability tensors. II. Discussion of values of polarizability parameters for some single bond involving carbon, Richard P. Smith and Earl M. Mortensen—508
Dielectric properties of linear polyamides, David W. McCall and Ernest W. Anderson—237
Dielectric relaxation of dilute solutions in the millimeter wave region, Jürgen Schneider—665
Dipole moment function for HD, S. M. Blinder—582
Experimental and theoretical aspects of Higasi's equation for a quick determination of electric dipole moment in solution, Bal Krishna and K. K. Srivastava—663
Measurement of dipole moments at microwave frequencies, James E. Boggs and A. P. Deam—315(L)
Microwave dielectric measurements in a liquid crystal that shows polymesomorphism, E. F. Carr—620(L)
Molecular rotation and dielectric relaxation in a crystal lattice, Colin Clemett and Mansel Davies—316(L)
NMR study in rochelle salt, R. Blinc and A. Prelesnik—387
Nonresonant absorption in symmetric-top gases. Dependence of relaxation frequency on temperature, A. A. Maryott, A. Estin, and G. Birnbaum—1501
Nonstoichiometry and ferroelectric properties of $PbNb_2O_6$-type compounds, E. C. Subbarao and G. Shirane—1846
Some effects of vapors on electret behavior, J. R. Beeler, Jr., J. D. Stranathan, and G. G. Wiseman—442
Study of the Wurtzite-type binary compounds. IV. Theory of double refraction, Frederic Keffer—62

Diffusion

Application of a high-speed electronic computer in diffusion kinetics. II. Depletion effect in the spherical one radical-one solute model, Hugo Fricke and David L. Phillips—1182
Calculation of the heat of solution of copper in germanium from diffusion measurements, M. Tannenbaum—1125
Diffusion and heterogeneous reaction. III. Atom recombination at a catalytic boundary, Hans Motz and Henry Wise—1893(L)
Diffusion of cadmium in pure and cadmium-doped AgBr, J. E. Hanlon—1492
Diffusion of impurities in amorphous polymers, A. W. Lawson—131
Dynamical theory of diffusion in crystals. IV. Some aspects of the introduction of irreversibility, Stuart A. Rice and Harry L. Frisch—1026
Kinetic theory of moderately dense rigid sphere fluids. III. The formulation and solution of the transport equation for binary mixtures, Robert A. Harris and Stuart A. Rice—538
Measurements of multicomponent diffusion coefficients for the CO_2–He–N_2 system using the point-source technique, R. E. Walker, N. DeHaas, and A. A. Westenberg—1314
Molecular diffusion studies in gases at high temperature. IV. Results and interpretation of the CO_2–O_2, CH_4–O_2, H_2–O_2, CO–O_2, and H_2O–O_2 systems, R. E. Walker and A. A. Westenberg—436
On the dynamical theory of diffusion in crystals. III. Some model calculations and relation to continuum theory, A. W. Lawson, Stuart A. Rice, Roger D. Corneliussen, and Norman H. Nachtrieb—447
Rotational diffusion constant of a cylindrical particle, S. Broersma—1626
Self-diffusion in liquid argon, G. Cini-Castagnoli and F. P. Ricci—19
Self-diffusion in the primary alcohols, David W. McCall and Dean C. Douglass—1876(L)
Statistical mechanical theory of the diffusion coefficients in binary liquid solutions, Richard J. Bearman—1308
Volumes of activation. II. Pressure dependence of activation parameters, Robert W. Keyes—1066

Dipole Moment

Electron-population analysis and the dipole moment of the LiH $^1\Sigma^+$ excited state, A. M. Karo—907
Influence of dipole-dipole coupling on the specific heat of a paramagnetic salt, R. I. Joseph and J. H. Van Vleck—1573(L)

Effusion

Closed crucible—a new technique in high temperature chemistry. Its application to tantalum and molybdenum oxides, E. David Cater, Ernest R. Plante, and Paul W. Gilles—1269(L)

Electrical Properties

Becquerel photovoltaic effect in binary compounds, Richard Williams—1505
Composition limits of stability of PbTe, R. F. Brebrick and R. S. Allgaier—1826
Electrical properties of organic solids. I. Kinetics and mechanism of conductivity of metal-free phthalocyanine, Gordon Tollin, David R. Kearns, and Melvin Calvin—1013
Electrical properties of organic solids. II. Effects of added electron acceptor on metal-free phthalocyanine, David R. Kearns, Gordon Tollin, and Melvin Calvin—1020
Electrical properties of poly-copper phthalocyanine, A. Epstein and Bernard S. Wildi—324
Organic semiconductors. I. The electrical conductivity and Seebeck coefficient of the *p*-phenylenediaminechloranil complex, Mortimer M. Labes, Robert Sehr, and Monisha Bose—1570(L)
Positive hole injection into organic crystals, H. Kallmann and M. Pope—299(L)
Pyroelectric effect in the cubic ZnS structure, Rolf Landauer—1784

Electrochemistry

Becquerel photovoltaic effect in binary compounds, Richard Williams—1505
Induced emf in electrolytes, F. Heinmets—1264(L)
Kinetics of the deposition and dissolution of silver, A. R. Despic and J. O'M. Bockris—389
Mayer's ionic solution theory applied to electrolyte mixtures, Harold L. Friedman—1133
Theory of fused salts, Frank H. Stillinger, Jr., John G. Kirkwood, and Peter J. Wojtowicz—1837
Theory of the heat of transport of electrolytic solutions, Eugene Helfand and John G. Kirkwood—857
Thermodynamic excess functions for electrolyte solutions, Harold L. Friedman—1351

Electron Affinity

Electron capture by neutral molecules, R. E. Stanton—1348
Estimated electron affinities of the light elements, George Glockler—708

Electron Diffraction

Application of least squares method to density-intensity calibration in electron diffraction studies, Katsumi Kimura and Masao Kimura—1398
Application of least-squares method to gaseous benzene in electron diffraction investigation, Katsumi Kimura and Masaji Kubo—1776
Electron diffraction study of monomethyl- and dimethylphosphine, L. S. Bartell—832

Electron diffraction study of the structure of trimethylphosphine, L. S. Bartell and L. O. Brockway—512
Electron scattering from iodine vapor, A. Almenningen, O. Bastiansen, L. Fernholt, and M. Traetteberg—616(L)
Mean square amplitudes and force constants of tetrahedral molecules. I. Carbon tetrachloride and germanium tetrachloride, Yonezo Morino, Yasushi Nakamura, and Takao Iijima—643
Remarks on the electron scattering by iodine, I. L. Karle—617(L)
Structure of isobutylene, L. S. Bartell and R. A. Bonham—824

Emission Spectra

Chemically induced vibrational excitation: Hydroxyl radical emission in the 1–3 micron region produced by the $H+O_3$ atomic flame, David Garvin, H. P. Broida, and H. J. Kostkowski—880
Effect of metal atom perturbations on the luminescent spectra of porphyrins, Jean B. Allison and Ralph S. Becker—1410
Emission by vibrational fundamentals and overtones in shock waves, J. C. Decius—1262(L)
Emission of activated cadmium selenide phosphors, M. Avinor and G. Meijer—1456
Emission of diffuse bands of sodium behind shock fronts, H. Takeyama and A. Guttman—634(L)
Emission spectra of N_2, O_2, and NO_2 molecules trapped in solid matrices, H. P. Broida and M. Peyron—1068
Emission spectra of trivalent terbium, L. G. Van Uitert and R. R. Soden—1160
Energy transfer in molecular complexes. II. The anthracene-*sym*-trinitrobenzene complex, S. P. McGlynn, J. D. Boggus, and E. Elder—357
Excitation of the auroral green line in nitrogen afterglows, R. A. Young and K. C. Clark—607
Experimental oscillator strength of the comet-tail system of CO^+, R. G. Bennett and F. W. Dalby—1110
Experimental oscillator strengths of CH and NH, R. G. Bennett and F. W. Dalby—1716
Extreme variations of the emission spectra of dysprosium chelates, G. A. Crosby and R. E. Whan—614(L)
Infrared emission spectra of gaseous B_2O_3 and B_2O. David White, David E. Mann, Patrick N. Walsh, and Armin Sommer—481
Infrared emission spectrum of gaseous HBO_2, David White, David E. Mann, Patrick N. Walsh, and Armin Sommer—488
Multiple emission spectra of trivalent europium in the scheelite structure, L. G. Van Uitert and R. R. Soden—1687
New emission bands of forbidden systems of nitrogen in the vacuum ultraviolet region, M. Ogawa and Y. Tanaka—754
On the mechanism of the Lewis-Rayleigh nitrogen afterglow, K. D. Bayes and G. B. Kistiakowsky—992
Source of green bands from boron-containing flames, W. E. Kaskan and R. C. Millikan—1273(L)
Spectra emitted from rare gas-oxygen solids during electron bombardment, L. J. Schoen and H. P. Broida—1183
Triplet-singlet emission spectra at xylenes in crystalline state at 4.2°K and 77°K. and in EPA at 77°K, Lawrence A. Blackwell, Yoshiya Kanda, and H. Sponer—1465
Ultraviolet resonance spectrum of the iodine molecule, R. D. Verma—738
Vibrational distribution in late nitrogen afterglows, R. A. Young and K. C. Clark—604
Visible emission of nickel-activated CaS, M. Avinor—621(L)

Energy Transfer

Collision of a gas atom with a cold surface, Robert W. Zwanzig—1172
Complete classical theory of vibrational energy exchange, Donald Rapp—735
Emission by vibrational fundamentals and overtones in shock waves, J. C. Decius—1262(L)
Energy transfer in molecular complexes. II. The anthracene-*sym*-trinitrobenzene complex, S. P. McGlynn, J. D. Boggus, and E. Elder—357
Radiant energy emission from excited harmonic oscillators, S. S. Penner—617(L)

Errata

Erratum. Theory of phase transitions in solid heavy methane, Hubert M. James and Thomas A. Keenan [J. Chem. Phys. **31**, 12 (1959)]—1877(L)

Faraday Effect

Anomalous Faraday dispersion of O_2, Jon T. Hougen—1122

Field Emission Microscopy

Kinetics of strontium oxide on tungsten, J. A. Cape and E. A. Coomes—210
Surface migration of nitrogen on tungsten, Gert Ehrlich and F. G. Hudda—942(L)

Films (see **Surface Phenomena**)

Flames

Generalization of the laminar flame action principle for arrhenius-type functions, Gerald Rosen—311(L)
Theory of flame propagation in solid nitrogen at low temperatures, S. G. Reed and C. M. Herzfeld—1

Fluorescence

Effect of metal atom perturbations on the luminescent spectra of porphyrins, Jean B. Allison and Ralph S. Becker—1410
Luminescence spectrum of $PmCl_3$, John G. Conway and John B. Gruber—1586(L)

Free Radicals

Catalytic effects in the dissociation of oxygen in microwave discharges, F. Kaufman and J. R. Kelso—301
Chemically induced vibrational excitation: Hydroxyl radical emission in the 1–3 micron region produced by the $H+O_3$ atomic flame, David Garvin, H. P. Broida, and H. J. Kostkowski—880
Detection of short-lived transients in radiation chemistry, Max S. Matheson and Leon M. Dorfman—1870(L)
Electron spin resonance studies of the potassium salt of *m*-dinitrobenzene negative ion, Raymond L. Ward—410
EPR characterization of radicals in irradiated tetra-*n*-butyl ammonium halides, E. J. Burrell, Jr.—955(L)
Free radicals from the flash photolysis of phenol, L. I. Grossweiner and E. F. Zwicker—305(L)
Hydrogen atom abstraction reactions by cyanide ion-radicals, T. W. Martin and C. E. Melton—700
Infrared detection of the formyl radical, HCO, George E. Ewing, Warren E. Thompson, and George C. Pimentel—927
Isotope exchange processes in solid nitrogen under electron bombardment, R. Klein and E. M. Hörl—307(L)
Matrix effects on the electron spin resonance spectra of trapped hydrogen atoms, F. J. Adrian—972
Matrix isolation studies: Infrared spectra of intermediate species in the photolysis of hydrazoic acid. II. Mathias Van Thiel and George C. Pimentel—133
Nitrogen chained compounds as intermediates in the photolysis of solid HN_3, Harold A. Papazian—456
Observations of the thermal behavior of radicals in gamma-irradiated ice, Seymour Siegel, Lillian H. Baum, Sol Skolnik, and John M. Flournoy—1249

Free Radicals (continued)

Phosphorescence of nitrogen and nitrogen-argon deposited films at 4.2°K, H. P. Broida and R. W. Nicholls—623(L)
Photolysis of ammonia in a solid matrix at low temperatures, O. Schnepp and K. Dressler—1682
Spectra emitted from rare-gas oxygen solids during electron bombardment, L. J. Schoen and H. P. Broida—1183
Spin densities in dimesitylmethyl, A. D. McLachlan—1488
Trapped free radical concentrations, Charles E. Hecht—365
Unimolecular decomposition of chemically activated ethyl-d_2 radicals, B. S. Rabinovitch, D. H. Dills, W. H. McLain, and J. H. Current—493

Free Rotation (see **Rotational Isomerism**)

Gases

Conditions imposed by gross properties on the intermolecular potential, H. L. Frisch and E. Helfand—269
Thermal conductivity of helium and hydrogen at high temperatures, Normand C. Blais and Joseph B. Mann—1459

Glasses

Note on the paramagnetic resonance of iron in glass, Theodore Castner, Jr., George S. Newell, W. C. Holton, and C. P. Slichter—668
Structure of glass forming halides. I. Liquid beryllium fluoride, J. D. Mackenzie—1149

Heat Capacity (see **Thermodynamic Properties**)

High Pressures

Effect of pressure on the spectra of color centers, R. A. Eppler and H. G. Drickamer—1418
Infrared studies of dense forms of ice, E. R. Lippincott, C. E. Weir, and A. Van Valkenburg—612(L)

Hindered Rotation (see **Rotation**)

Infrared Spectra (see **Absorption Spectra**)

Intensities of Spectra

Calculation of delocalization contribution to infrared intensity, Walter D. Jones and William T. Simpson—1747
Determination of the dipole moment function from infrared band intensities of diatomic molecules, Robert Herman and Robert J. Rubin—1393
Difference of the upper and lower state rotational constants of symmetrical-top molecules from infrared intensity measurement, Tsuneo Yoshino—1574(L)
Experimental oscillator strengths of CH and NH, R. G. Bennett and F. W. Dalby—1716
Rotation-vibration interaction in electronic transitions. Application to rotational "temperature" measurements, Thomas C. James—1770
Study of infrared reflection spectrum of liquid C_6H_6, David A. Dows and J. L. Hollenberg—1581(L)

Isotope Effects

Approximate isotopic frequency rule and its application to the spectra of complex molecules, S. Krimm—1780
Effect of deuterium substitution on the lifetime of the phosphorescent triplet state of naphthalene, Clyde A. Hutchison, Jr., and Billy W. Mangum—1261(L)
Enrichment of nitrogen-15 by chemical exchange of NO with liquid N_2O_3, E. U. Monse, W. Spindel, Lois Nash Kauder, and T. I. Taylor—1557
Intermolecular isotope effect in recoil tritium reactions with hydrogen, J. K. Lee, Burdon Musgrave, and F. S. Rowland—1266(L)
Isotope effect in the hydrogen atom-formaldehyde reaction, James R. McNesby, Milton D. Scheer, and Ralph Klein—1814
Isotope effects in the chromic acid oxidation of benzyl-α-t alcohol, Ernest M. Hodnett and Louis Kaplan—312(L)
Isotropic proton hyperfine interaction in the methyl radical, Jiro Higuchi and Shigeyuki Aono—52
Some observations on atomic exchange in nitric oxide, W. Spindel and Marvin J. Stern—1579(L)
Spectral and reactivity differences of transition metal ions in H_2O and D_2O, Jacob Bigeleisen—1583(L)
Theory of ortho-para hydrogen separation by adsorption at low temperatures, isotope separation, David White and Edwin N. Lassettre—72
Tracer experiments on the reaction of UH_3 with aqueous acid, Umesh Agarwala, J. B. Hunt, and H. Taube—1567(L)

Isotopes

Isotope exchange processes in solid nitrogen under electron bombardment, R. Klein and E. M. Hörl—307(L)
Role of thermal diffusion in the electrolytic separation of isotopes in liquid metals, Paul C. Mangelsdorf, Jr.—293
Vapor pressures of the neon isotopes, Etienne G. Roth and Jacob Bigeleisen—612(L)

Kinetics of Reaction

Bimolecular reaction rates in solids and liquids, Thomas R. Waite—21
Burning rates of solid propellants, Gerald Rosen—89
Catalytic effects in the dissociation of oxygen in microwave discharges, F. Kaufman and J. R. Kelso—301
Charge transfer mechanism of reaction of conjugated molecules, Kenichi Fukui, Keiji Morokuma, Teijiro Yonezawa, and Chikayoshi Nagata—1743
Comparison of n and s as fall-off parameters in the Slater and Rice-Ramsperger-Kassel classical theories of unimolecular reaction, E. W. Schlag, B. S. Rabinovitch, and F. W. Schneider—1599
Diffusion and heterogeneous reaction. III. Atom recombination at a catalytic boundary, Hans Motz and Henry Wise—1893(L)
Formation of excited NO and N_2 by wall catalysis, Robert R. Reeves, Gene Mannella, and Paul Harteck—946(L)
Hydrogen atom abstraction reactions by cyanide ion-radicals, T. W. Martin and C. E. Melton—700
Isotope effect in the hydrogen atom-formaldehyde reaction, James R. McNesby, Milton D. Scheer, and Ralph Klein—1814
Isotope effects in the chromic acid oxidation of benzyl-α-t alcohol, Ernest M. Hodnett and Louis Kaplan—312(L)
Kinetic studies of hydroxyl radicals in shock waves. III. The OH concentration maximum in the hydrogen-oxygen reaction, Garry L. Schott—710
Kinetics of strontium oxide on tungsten, J. A. Cape and E. A. Coomes—210
Kinetics of the deposition and dissolution of silver, A. R. Despic and J. O'M. Bockris—389
Kinetics of the hydrolysis of acetyl chloride, E. J. Cairns and J. M. Prausnitz—169
Kinetics of the surface degradation of polymethylmethacrylate, R. F. Chaiken, W. H. Andersen, M. K. Barsh, E. Mishuck, G. Moe, and R. D. Schultz—141
Kinetics of unimolecular decomposition of excited alkylamine ions, William A. Chupka and Joseph Berkowitz—1546
Mechanics of atomic recombination reactions, Don L. Bunker—1001

On chemical reactions in free molecule flow, Paul L. Chambré—24
Perturbation of molecular distribution functions by chemical reaction, Bruce H. Mahan—362
Rate constants at low concentrations. V. The mechanism of reaction of ozone with photolyzing nitrogen dioxide in the presence of excess oxygen, H. W. Ford, G. J. Doyle, and N. Endow—1256
Rate of recombination of oxygen atoms, Robert R. Reeves, Gene Mannella, and Paul Harteck—632(L)
Some considerations of unimolecular rate theory, Frank P. Buff and David J. Wilson—677
Tracer experiments on the reaction of UH_3 with aqueous acid, Umesh Agarwala, J. B. Hunt, and H. Taube—1567(L)
Unimolecular decomposition of chemically activated ethyl-d_2 radicals, B. S. Rabinovitch, D. H. Dills, W. H. McLain, and J. H. Current—493
Unimolecular decomposition of chemically activated *sec*-deuterobutyl radicals from D atoms plus *cis*-butene-2, R. E. Harrington, B. S. Rabinovitch and R. W. Diesen—1245
Variation of a chemical reaction cross section with energy, E. F. Greene, R. W. Roberts, and J. Ross—940(L)
Variation with temperature of the recombination of oxygen atoms on a platinum surface, George C. Fryburg and Helen M. Petrus—622(L)
Variational theory of chemical reaction rates applied to three-body recombinations, James C. Keck—1035

Large Molecules (see Polymers)

Electrically discharged CO_2 as a source of oxygen atoms, E. A. Ogryzlo and H. I. Schiff—628(L)
Heterogeneous nature of the reaction in radiation induced solid state polymerization of acrylamide, George Adler and Walter Reams—1698

Light Scattering

Critical opalescence of polystyrene solutions, P. Debye, H. Coll, and D. Woermann—939(L)
Light scattering by anisotropic inhomogeneities in thin polymer films under strain. I. Simple elongation, Hari L. Bhatnagar—674
Theoretical investigations on the light scattering of colloidal spheres. VIII. Angular location of intensity maxima and minima in the radiation diagram of colloidal spheres, Masayuki Nakagaki and Wilfried Heller—835

Liquids

Cluster formation in perfluoroheptane-*i*-octane systems near the consolute temperature, George W. Brady—45
Determination of atomic distributions in liquid lead-bismuth alloys by neutron and x-ray diffraction, Paul C. Sharrah, John I. Petz, and Robert F. Kruh—241
"Improved" free-volume theory of liquids. II, John S. Dahler and Joseph O. Hirschfelder—330
Self-diffusion in liquid argon, G. Cini-Castagnoli and F. P. Ricci—19
Statistical mechanical theory of the diffusion coefficients in binary liquid solutions, Richard J. Bearman—1308
Structure of glass forming halides. I. Liquid beryllium fluoride, J. D. Mackenzie—1149
Structure of water, George W. Brady and W. J. Romanow—306(L)
Theory of fused salts, Frank H. Stillinger, Jr., John G. Kirkwood, and Peter J. Wojtowicz—1837

Magnetic Resonance

Analysis of the nuclear magnetic resonance spectrum of a six-spin system of monofluorobenzene, Shizuo Fujiwara and Hiroshi Shimizu—1636
Anomalous relaxation of hyperfine components in electron spin resonance, Jan W. H. Schreurs, George E. Blomgren, and George K. Fraenkel—1861
B^{11} nuclear magnetic resonance spectrum of the "diammoniate of diborane," Thomas P. Onak and I. Shapiro—952(L)
Common error made in treating hyperfine effects in electron paramagnetic resonance studies of free radicals, Henry Zeldes, G. T. Trammell, Ralph Livingston, and R. W. Holmberg—618(L)
Concentration dependence of the polarization and relaxation time of Al^{27} nuclei in ruby, R. D. Spence and J. A. Cowen—624(L)
C^{13}-hyperfine splitting in benzonitrile negative ion, Raymond L. Ward—1592(L)
Effect of deuterium substitution on the lifetime of the phosphorescent triplet state of naphthalene, Clyde A. Hutchison, Jr., and Billy W. Mangum—1261(L)
Effects of gases on irradiated polyvinyl chloride as studied by electron spin resonance, Zenichiro Kuri, Hisashi Ueda, and Shoji Shida—371
Electron spin resonance of an irradiated single crystal of alanine: Second-order effects in free radical resonances, Ichiro Miyagawa and Walter Gordy—255
Electron spin resonance of colloidal sodium in sodium azide, G. J. King, B. S. Miller, F. F. Carlson, and R. C. McMillan—940(L)
Electron spin resonance spectrum of the cyclooctatetraenyl radical anion, Thomas J. Katz and Herbert L. Strauss—1873(L)
Electron spin resonance studies of semiquinones and the C—F bond, D. H. Anderson, Peter J. Frank, and H. S. Gutowsky—196
Electron spin resonance studies of the oxygen effect on the irradiated polytetrafluoroethylene, Teikichi Matsugashita and Kenichi Shinohara—954(L)
Electron spin resonance studies of the potassium salt of *m*-dinitrobenzene negative ion, Raymond L. Ward—410
EPR characterization of radicals in irradiated tetra-*n*-butyl ammonium halides, E. J. Burrell, Jr.—955(L)
Isotropic proton hyperfine interaction in the methyl radical, Jiro Higuchi and Shigeyuki Aono—52
Matrix effects on the electron spin resonance spectra of trapped hydrogen atoms, F. J. Adrian—972
Multiple trapping sites for hydrogen atoms in rare gas matrices, S. N. Foner, E. L. Cochran, V. A. Bowers, and C. K. Jen—963
New phototropic substance and its electron spin resonance, Taro Hayashi, Koko Maeda, Shoji Shida, and Kazuo Nakada—1568(L)
Note on the paramagnetic resonance of iron in glass, Theodore Castner, Jr., George S. Newell, W. C. Holton, and C. P. Slichter—668
Note on the paramagnetic resonance spectrum of fluoroferrate ion FeF_6^{--}, L. Helmholtz, and A. V. Guzzo—302(L)
NMR chemical shifts of aluminum: Experimental data and variational calculation, D. E. O'Reilly—1007
NMR studies on 1-methoxyvinyl esters, Martin Saunders, Janis Plostnieks, Peter S. Wharton, and Harry H. Wasserman—317(L)
NMR study in rochelle salt, R. Blinc and A. Prelesnik—387
NMR study of acetaldehyde-water mixtures, E. Lombardi and P. B. Sogo—635(L)
NMR study of bonding in some solid boron compounds, A. H. Silver and P. J. Bray—288
Nuclear magnetic resonance in B_2O_3–H_2O glasses and boric acids, A. H. Silver—959
Nuclear magnetic resonance spectra of some simple epoxides, C. A. Reilly and J. D. Swalen—1378
Nuclear magnetic resonance studies on hydration of cations, Jasper A. Jackson, Joe F. Lemons, and Henry Taube—553
Nuclear magnetic resonance studies on mixed boron halides. Detection of the new halide BBrClF, T. D. Coyle and F. G. A. Stone—1892(L)
Nuclear magnetic resonance study of polycrystalline NH_4ClO_4, James A. Ibers—1448

Magnetic Resonance (continued)

Nuclear magnetic shielding in molecules: Hydrogen molecule, S. K. Sinha and A. Mukherji—1652
Observations of the thermal behavior of radicals in gamma-irradiated ice, Seymour Siegel, Lillian H. Baum, Sol Skolnik, and John M. Flournoy—1249
On the electron spin resonance spectra of hydrocarbon radicals, Peter G. Lykos—625(L)
On the nature of solvent effects in the proton resonance spectra of unsaturated ring compounds. I. Substituted benzenes, T. Schaefer and W. G. Schneider—1217
On the nature of solvent effects in the proton resonance spectra of unsaturated ring compounds. II. Heterocyclic compounds, T. Schaefer and W. G. Schneider—1224
Paramagnetic resonance absorption in neptunium hexafluoride, Clyde A. Hutchison, Jr., and Bernard Weinstock—56
Paramagnetic resonance in charred dextrose, R. C. Pastor and R. H. Hoskins—264
Paramagnetic resonance in tetravalent Pa^{231}, John D. Axe, Rutao Kyi, and H. J. Stapleton—1261(L)
Paramagnetic resonance of Co^{2+} with four- and eightfold coordination, T. P. P. Hall and W. Hayes—1871(L)
Paramagnetic resonance of Ti^{3+}, Cr^{3+}, and Fe^{3+} in $AlCl_3 \cdot 6H_2O$, Eugene Y. Wong—598
Possible symptom of the Jahn-Teller effect in the negative ions of coronene and triphenylene, M. G. Townsend and S. I. Weissman—309(L)
Potential energy barrier to rotation in methyl nitrite measured by proton magnetic resonance, Peter Gray and L. W. Reeves—1878(L)
Proton and B^{11} magnetic resonance of borazole, Kazuo Ito, Haruyuki Watanabe, and Masaji Kubo—947(L)
Proton hyperfine spectra of diphenyl picryl hydrazyl, Yasuo Deguchi—1584(L)
Proton magnetic resonance spectrum of propane, Donald R. Whitman, Lars Onsager, Martin Saunders, and Hubert E. Dubb—67
Proton magnetic resonance studies of some silicones, Hazime Kusumoto, Ian J. Lawrenson, and H. S. Gutowsky—724
Proton magnetic resonance study of the structure of barium chloride dihydrate, A. A. Silvidi and J. W. McGrath—924
Proton NMR spectra of the N,N-dimethylformamide, N-methylformamide and N,N-dimethylacetamide, Valdemar J. Kowalewski and Dora G. de Kowalewski—1272(L)
Proton relaxation times in protein complexes of paramagnetic ions, Arnold Wishnia—871
Radiation damage in organic crystals. II. Electron spin resonance of $(CO_2H)\,CH_2CH\,(CO_2H)$ in β-succinic acid, Chonon Heller and Harden M. McConnell—1535
Relative signs of spin-spin interactions in NMR II, S. Alexander—1700
Self-diffusion in the primary alcohols, David W. McCall and Dean C. Douglass—1876(L)
Solvent effects in nuclear magnetic resonance spectra, A. D. Buckingham, T. Schaefer, and W. G. Schneider—1227
Spin-coupling between protons of different rings in aromatic compounds, F. A. L. Anet—1274(L)
Spin distribution in naphthalene negative ion, T. R. Tuttle, Jr.—1579(L)
Spin-lattice relaxation and molecular structure. I. The major importance of intermolecular contributions, F. A. Bovey—1877(L)
Steady state studies by EPR on the photodissociation of some alkyl hydroperoxides, L. H. Piette and W. C. Landgraf—1106
Theory of saturation in electron spin resonance spectra, Michael J. Stephen and George K. Fraenkel—1435
Zeeman splitting of nuclear quadrupole levels in cuprite, Henry L. Cox, Jr., and Dudley Williams—633(L)

Magnetic Susceptibilities

Magnetic investigations of spin-free cobaltous complexes. II. Tetrahedral complexes, Richard H. Holm and F. Albert Cotton—1167
Paramagnetic susceptibility of polycrystalline thulium from 300° to 1500°K, Sigurds Arajs—951(L)
Structure and magnetic properties of $LiCuCl_3 \cdot 2H_2O$, P. H. Vossos, L. D. Jennings, and R. E. Rundle—1590(L)

Mass Spectra

Appearance potential study of tetrafluorohydrazine, E. Dan Loughran and Charles Mader—1578(L)
Correlation of molecular yields in hydrocarbon radiolyses with mass spectral data, Leon M. Dorfman and Myran C. Sauer, Jr.—1886(L)
Dissociation of C_6H_5T following beta decay, Thomas A. Carlson—1234
Electron attachment in $C_8F_{16}O$, J. von Hoene and W. M. Hickam—876
Ionization potential of fluorine, John T. Herron and Vernon H. Dibeler—1884(L)
Ionization potentials of B_5H_9, B_5H_8I, $B_{10}H_{14}$, and $B_{10}H_{13}C_2H_5$ from electron impact studies, John L. Margrave—1889(L)
Ion-molecule charge transfer reactions in the alpha radiolysis of various hydrocarbons in a mass spectrometer, P. S. Rudolph and C. E. Melton—586
Ion-molecule reactions in mass spectrometric studies of alkali halide salts, Thomas A. Milne—1275(L)
Isomeric effects in fragmentation by beta decay: monotritiated propanes and toluenes, S. Wexler, G. R. Anderson, and L. A. Singer—417
Kinetics of unimolecular decomposition of excited alkylamine ions, William A. Chupka and Joseph Berkowitz—1546
Mass spectrometric investigation of the sublimation of molybdenum dioxide, R. P. Burns, G. DeMaria, J. Drowart, and R. T. Grimley—1363
Mass spectrometric studies of ionic intermediates in the alpha-particle radiolysis of ethylene, C. E. Melton and P. S. Rudolph—1127
Mass spectrometric study of gaseous molybdenum, tungsten, and uranium oxides, G. DeMaria, R. P. Burns, J. Drowart, and M. G. Inghram—1373
Mass spectrum of propane: Isotope effect and metastable ions, Allen Kropf, Edward M. Eyring, Austin L. Wahrhaftig, and Henry Eyring—149
Negative ion formation in NO_2 by electron attachment, R. E. Fox—285
Stabilities of the gaseous molecules, BiSe, BiTe, and SbTe, Richard F. Porter and C. W. Spencer—943(L)
Thermodynamic study of Al_2O_3 using a mass spectrometer, J. Drowart, G. DeMaria, R. P. Burns, and M. G. Inghram—1366
Threshold ionization of HCl by electron impact, R. E. Fox—385
Threshold law for the probability of excitation by electron impact, F. H. Dorman, J. D. Morrison, and A. J. C. Nicholson—378
Use of constant-boiling systems in calibration of mass spectrometers and other molecular beam instruments, Alan W. Searcy, Wendell S. Williams, and Paul O. Schissel—957(L)

Mechanics, Quantum

Anomalous Faraday dispersion of O_2, Jon T. Hougen—1122
Approximate analytical wave functions for the $1snsS$ states of He and He-like ions, Z. Ritter and R. Pauncz—1820
Calculation of the coupling terms neglected in performing the Born-Oppenheimer separation for the hydrogen molecule ion, Donald W. Jepsen and Joseph O. Hirschfelder—1323
Common error made in treating hyperfine effects in electron paramagnetic resonance studies of free radicals, Henry Zeldes, G. T. Trammell, Ralph Livingston, and R. W. Holmberg—618(L)

Construction of hybrid orbitals, J. N. Murrell—767
Correlation of rates of intramolecular tunneling processes, with application to some group V compounds, R. Stephen Berry—933
Dangers of the "average energy approximation" in perturbation theory, A. D. McLachlan—1263(L)
Dipole moment function for HD, S. M. Blinder—582
Dynamical Jahn-Teller theorem, William L. Clinton—626(L)
Electronic structure of carbon monoxide, Hélène Brion and Carl Moser—1193
Electronic structure of CH_2 and CH_3, A. Padgett and M. Krauss—189
Electronic structure of LiH. V. A radially correlated wave function, J. M. Robinson, J. D. Stuart, and F. A. Matsen—988
Electronic structures and spectra of nitromethane and nitrogen dioxide, K. Lenore McEwen—1801
Empirical intermolecular potential for inert gas atoms, Harold W. Woolley—405
Energy levels of a slightly asymmetric top, James A. Norris and Victor W. Laurie—1591(L)
Erratum. Theory of phase transitions in solid heavy methane, Hubert M. James and Thomas A. Keenan [J. Chem. Phys. **31**, 12 (1959)]—1877(L)
Evaluation of one-center electron repulsion integrals between certain *s*-type atomic orbitals, Walter D. Jones and F. L. Brooks, Jr.—124
Field gradients at the deuteron in molecules, R. Bersohn—85
f^2 configuration in a crystalline field, Robert A. Satten and Jack S. Margolis—573
Generalized perturbation method employing nonorthogonal functions, S. M. Blinder—111
Ground state electronic wave function of methane, R. K. Nesbet—1113
Interactions between ground-state oxygen atoms and molecules: O–O and O_2–O_2, Joseph T. Vanderslice, Edward A. Mason, and William G. Maisch—515
LCAO–MO–SCF ground state calculations on C_2H_2 and CO_2, A. D. McLean—1595(L)
Lower excited electronic states of carbon monoxide, P. Merryman, C. M. Moser, and R. K. Nesbet—631(L)
Molecular orbital studies of diatomic molecules. I. Method of computation for single configurations of heteronuclear systems, Frank E. Harris—3
On the correlation correction to the Fermi-Thomas-Dirac equation, Herbert Payne—1589(L)
Potential energy curves of hydrogen fluoride, Robert J. Fallon, Joseph T. Vanderslice, and Edward A. Mason—698
Short-range interaction between a hydrogen molecule and a hydrogen atom. II, William J. Jameson, Jr., and Henry Aroeste—374
Simple configuration-interaction wave functions. I. Two-electron ions: a numerical study, J. N. Silverman, O. Platas, and F. A. Matsen—1402
Simple configuration-interaction wave functions. II. Two-electron ions: An analytic study, Charles W. Scherr and Jeremiah N. Silverman—1407
Some calculations based on an LCGO–MO treatment, Jiro Higuchi—636(L)
Some properties of first-order density matrices with special application to many-electron atoms, Werner A. Bingel—1524
Spin densities in odd alternant hydrocarbon radicals, Roland Lefebvre, Henry H. Dearman, and Harden M. McConnell—176
Theory of electronic excitation and reorganization in the formaldehyde molecule, Joe M. Parks and Robert G. Parr—1657

Mechanics, Statistical

Aspects of the statistical thermodynamics of real fluids, Howard Reiss, H. L. Frisch, E. Helfand, and J. L. Lebowitz—119
Brownian motion in liquids, Gerald Mandel and Frank C. Collins—1796
Conditions imposed by gross properties on the intermolecular potential, H. L. Frisch and E. Helfand—269
Dynamical theory of diffusion in crystals. IV. Some aspects of the introduction of irreversibility, Stuart A. Rice and Harry L. Frisch—1026
First-order stochastic processes, Irvin M. Krieger and Paul J. Gans—247
"Improved" free-volume theory of liquids, II, John S. Dahler and Joseph O. Hirschfelder—330
Kinetic theory of moderately dense rigid sphere fluids. III. The formulation and solution of the transport equation for binary mixtures, Robert A. Harris and Stuart A. Rice—538
Note on the equation of state for hard spheres, O. K. Rice—1277(L)
On the kinetic theory of a fluid composed of rigid spheres, James T. O'Toole and John S. Dahler—1096
Quantum mechanical cell model of the liquid state, J. M. H. Levelt and R. P. Hurst—96
Perturbation of molecular distribution functions by chemical reaction, Bruce H. Mahan—362
Principle of corresponding states for transport properties, Eugene Helfand and Stuart A. Rice—1642
Quantum mechanical modified Boltzmann equation for degenerate internal states, Robert F. Snider—1051
Redetermination of the intermolecular potential for krypton, Edward A. Mason—1832
Relaxation of an isolated ensemble of harmonic oscillators, Kurt E. Shuler—1692
Rotational relaxation of rough spheres, B. Widom—913
Statistical mechanical theory of the diffusion coefficients in binary liquid solutions, Richard J. Bearman—1308
Theory of fused salts, Frank H. Stillinger, Jr., John G. Kirkwood, and Peter J. Wojtowicz—1837
Theory of the heat of transport of electrolytic solutions, Eugene Helfand and John G. Kirkwood—857
Transport in dilute gases and chemical forces, Richard K. Osborn—1817
Trapped free radical concentrations, Charles E. Hecht—365

Metals

Electron spin resonance of colloidal sodium in sodium azide, G. J. King, B. S. Miller, F. F. Carlson, and R. C. McMillan—940(L)

Microwave Spectra (see Absorption Spectra)

Molecular Films (see Surface Phenomena)

Molecular Spectra (see Absorption Spectra, Emission Spectra, Fluorescence and Raman Spectra

Vibration-rotation bands of ammonia. IV. The stretching fundamentals and associated bands near 3μ, W. S. Benedict, E. K. Plyler, and E. D. Tidwell—32

Molecular Structure and Constants (see also Absorption Spectra, Fluorescence, Raman Spectra, Electron and X-ray Diffraction

Application of least-squares method to gaseous benzene in electron diffraction investigation, Katsumi Kimuri and Masaji Kubo—1776
Approximate isotopic frequency rule and its application to the spectra of complex molecules, S. Krimm—1780
Atomic polarization. I. Vibrational polarization of gases, Karl H. Illinger and Charles P. Smyth—787
Bond and molecular polarizability tensors. I. Mathematical treatment of bond tensor additivity, Richard P. Smith and Earl M. Mortensen—502

Molecular Structure and Constants (see also Absorption Spectra, Fluorescent, Raman Spectra, Electron and X-ray Diffusion) (continued)

Bond and molecular polarizability tensors. II. Discussion of values of polarizability parameters for some single bond involving carbon, Richard P. Smith and Earl M. Mortensen—508

Calculation of the coupling terms neglected in performing the Born-Oppenheimer separation for the hydrogen molecule ion, Donald W. Jepsen and Joseph O. Hirschfelder—1323

Calculation of the dissociation energy of NH by a semiempirical interpolative method, Audrey L. Companion and Frank O. Ellison—1131

Centrifugal distortion in symmetric-top molecules, Maurice W. Long—948(L)

Charge distribution, hybridization, and bonding in acetylene and carbon dioxide, A. D. McLean, B. J. Ransil, and R. S. Mulliken —1873(L)

Dipole moment of HD, S. M. Blinder—105

Electron diffraction study of monomethyl- and dimethylphosphine, L. S. Bartell—832

Electron diffraction study of the structure of trimethylphosphine, L. S. Bartell and L. O. Brockway—512

Electron-population analysis and the dipole moment of the LiH $^1\Sigma^+$ excited state, A. M. Karo—907

Electron spin resonance studies of semiquinones and the C—F bond, D. H. Anderson, Peter J. Frank, and H. S. Gutowsky—196

Electronic interaction in the free-electron network model for conjugated systems. III. Spectra of hydrocarbons other than even alternants, Norman S. Ham—1445

Electronic states of *p*-benzoquinone. VI. Molecular geometry in the excited electronic state of 4500-A absorption system as derived from Franck-Condon principle, Tosinobu Anno and Akira Sadô—1611

Electronic structure and spectrum of acetanilide, Hiroaki Baba and Satoshi Suzuki—1706

Electronic structure of carbon monoxide, Hélène Brion and Carl Moser—1193

Electronic structure of CH_2 and CH_3, A. Padgett and M. Krauss—189

Electronic structure of LiH. V. A radially correlated wave function, J. M. Robinson, J. D. Stuart, and F. A. Matsen—988

Electronic structures and spectra of nitromethane and nitrogen dioxide, K. Lenore McEwen—1801

Energy levels of a slightly asymmetric top, James A. Norris and Victor W. Laurie—1591(L)

Far infrared spectra of some symmetric top molecules, Dean W. Robinson and Donald A. McQuarrie—556

Forbidden band systems in nitrogen. III. The $Y\ ^3\Sigma_u^- \leftarrow X\ ^1\Sigma_g^+$ system in absorption, P. G. Wilkinson—1061

Ground state electronic wave function of methane, R. K. Nesbet—1113

Group electronegativities from bond lengths, Henry A. Bent—1582(L)

Infrared spectra of alkyldiboranes. II. Monoethyldiboranes, Walter J. Lehmann, Charles O. Wilson, Jr., and I. Shapiro—1786

Infrared spectra of metal-chelate compounds. I. A normal coordinate treatment on *bis*-(acetylacetonato)-Cu(II) Kazuo Nakamoto and Arthur E. Martell—588

Interactions between ground-state oxygen atoms and molecules: O–O and O_2–O_2, Joseph T. Vanderslice, Edward A. Mason, and William G. Maisch—515

Ionization potentials and electrostatic polarization, Norman D. Coggeshall—1265(L)

K-type doubling in phosphine, J. M. Hoffman, H. H. Nielsen, and K. Narahari Rao—1597(L)

LCAO–MO–SCF ground state calculations on C_2H_2 and CO_2, A. D. McLean—1595(L)

Ligand-field theory of linear gaseous molecules involving the first transition series elements, Robert A. Berg and Oktay Sinanoğlu —1082

Low excited states in C_2, Enrico Clementi and Kenneth S. Pitzer—656

Lower excited electronic states of carbon monoxide, P. Merryman, C. M. Moser, and R. K. Nesbet—631(L)

Mean square amplitudes and force constants of tetrahedral molecules. I. Carbon tetrachloride and germanium tetrachloride, Yonezo Morino, Yasushi Nakamura, and Takao Iijima—643

Microwave spectra and structure of H_3SiCN and D_3SiCN, Norbert Muller and Ronald C. Bracken—1577(L)

Microwave spectrum and molecular structure of formamide, C. C. Costain and J. M. Dowling—158

Microwave spectrum and molecular structure of monochloroacetonitrile, Jack D. Graybeal—1258

Microwave spectrum, structure, dipole moment, and nuclear quadrupole effects in vinyl chloride, Daniel Kivelson, E. Bright Wilson, Jr., and David R. Lide, Jr.—205

MO treatment of acetylene including all electrons, Louis Burnelle —1872(L)

Molecular orbital studies of diatomic molecules. I. Method of computation for single configurations of hetero-nuclear systems, Frank E. Harris—3

Nature of the free electron model. The case of the polyenes and polyacetylenes, F. Bar, W. Huber, G. Handschig, H. Martin, and H. Kuhn—470

Nature of the free electron model. The simple case of the symmetric polymethines, H. Kuhn, W. Huber, G. Hanschig, H. Martin, F. Schäfer, and F. Bar—467

Nuclear magnetic shielding in molecules: Hydrogen molecule, S. K. Sinha and A. Mukherji—1652

On the effects of intramolecular van der Waals forces, L. S. Bartell —827

On the structure of trimethylamine-trimethylboron, S. Geller—1569(L)

Out-of-plane vibrations of molecules containing planar XY_4 rings. I. The normal vibration problem, James E. Stewart—1164

Paramagnetic resonance absorption in neptunium hexafluoride, Clyde A. Hutchison, Jr., and Bernard Weinstock—56

Perturbation treatment of the characteristic vibrations of polypeptide chains in various configurations, Tatsuo Miyazawa—1647

Potential energy barrier to rotation in methyl nitrite measured by proton magnetic resonance, Peter Gray and L. W. Reeves—1878(L)

Potential energy constants, rotational distortion constants, and thermodynamic properties for NH_3, ND_3, PH_3, PD_3, AsH_3, and AsD_3, S. Sundaram, Frank Suszek, and Forrest F. Cleveland—251

Potential energy constants, rotational distortion constants, and thermodynamic properties of $B^{11}H_3CO$, $B^{11}D_3CO$, $B^{10}H_3CO$, and $B^{10}D_3CO$, S. Sundaram and Forrest F. Cleveland—166

Potential energy constants, rotational distortion constants, and thermodynamic properties of $H_2C{=}C{=}O$ and $D_2C{=}C{=}O$, S. Sundaram and Forrest F. Cleveland—1554

Potential energy curves for lithium hydride, Robert J. Fallon, Joseph T. Vanderslice, and Edward A. Mason—1453

Potential energy curves of hydrogen fluoride, Robert J. Fallon, Joseph T. Vanderslice, and Edward A. Mason—698

Raman spectra of metal carbonyl compounds II. Raman spectra, structure and force constants of cobalt and iron tetracarbonylate anions, H. Stammreich, K. Kawai, Yara Tavares, P. Krumholz, J. Behmoiras and S. Bril—1482

Raman spectrum and structure of perchlorylfluoride, F. X. Powell and E. R. Lippincott—1883(L)

Reply to "On the structure of trimethylamine-trimethylboron," David R. Lide, Jr.—1570(L)

Second differences of moments of inertia in structural calculations: Application to methyl-fluorosilane molecules, Lawrence C. Krisher and Louis Pierce—1619

Semiempirical calculation on the electronic structure of the nitrogen-containing heterocyclic molecules. III. Lower triplet levels of pyrazine, Tosinobu Anno and Akira Sadô—619(L)
Semiempirical calculation on the electronic structure of the nitrogen-containing heterocyclic molecules. IV. Electronic structure of pyridine, Tosinobu Anno—867
Simple configuration-interaction wave functions. I. Two-electron ions: a numerical study, J. N. Silverman, O. Platas, and F. A. Matsen—1402
Simple configuration-interaction wave functions. II. Two-electron ions: An analytic study, Charles W. Scherr and Jeremiah N. Silverman—1407
Some calculations based on an LCGO-MO treatment, Jiro Higuchi—636(L)
Spin densities in dimesitylmethyl, A. D. McLachlan—1488
Spin densities in odd alternant hydrocarbon radicals, Roland Lefebvre, Henry H. Dearman, and Harden M. McConnell—176
Spin distribution in naphthalene negative ion, T. R. Tuttle, Jr.—1579(L)
Stark effect and dipole moment of CH_3CHF_2, George H. Kwei and Dudley R. Herschbach—1270(L)
Structure of isotubylene, L. S. Bartell and R. A. Bonham—824
Theory of electronic excitation and reorganization in the formaldehyde molecule, Joe M. Parks and Robert G. Parr—1657
Transferability of Urey-Bradley force constants: I. Calculation of force constants on a digital computer, John Overend and J. R. Scherer—1289
Transferability of Urey-Bradley force constants. II. The carbonyl halides and related molecules, John Overend and J. R. Scherer—1296
Transferability of Urey-Bradley force constants. III. The vinylidene halides, James R. Scherer and John Overend—1720
Vibration-rotation bands of ammonia. IV. The stretching fundamentals and associated bands near 3μ, W. S. Benedict, E. K. Plyler, and E. D. Tidwell—32
Vibrational frequencies of alkali halide dimers: II. Bending, symmetric stretch, and B_{1g} modes, Joseph Berkowitz—1521
Vibrational spectra of OsF_6 and PtF_6, Bernard Weinstock, Howard H. Claassen, and John G. Malm—181

Neutron Diffraction

Determination of atomic distributions in liquid lead-bismuth alloys by neutron and x-ray diffraction, Paul C. Sharrah, John I. Petz, and Robert F. Kruh—241
Neutron diffraction study on sodium tungsten bronzes Na_xWO_3 ($x=0.9\sim0.6$), Masao Atoji and R. E. Rundle—627(L)
Study of rhombohedral V_2O_3 by neutron diffraction, A. Paoletti and S. J. Pickart—308
Transmission measurements with cold neutrons in hydrogenous liquids, R. Nasuhoglu and G. R. Ringo—476

Nuclear Quadrupole Resonance

Chlorine nuclear spin lattice relaxation in solid sodium chlorate and *P*-dichloro benzene, P. A. Bender, D. A. Jennings and W. H. Tanttila—499
Dependence upon volume of nuclear electric quadrupole interactions in crystals, R. A. Bernheim and H. S. Gutowsky—1072
Field gradients at the deuteron in molecules, R. Bersohn—85
N^{14} pure quadrupole resonances of acetonitrile and hydrocyanic acid, Hisao Negita, P. A. Casabella, and P. J. Bray—314(L)
Nuclear quadrupole coupling in chlorite ion, J. L. Ragle—403
Nuclear quadrupole coupling in the alums, Gerald Burns—1585(L)
Quadrupole resonance spectrum of chloranil and its hexamethylbenzene complex, Dean C. Douglass—1882(L)
Temperature dependence of quadrupole resonance frequencies under constant pressure, R. J. C. Brown—116
Temperature dependence of the chlorine pure quadrupole resonance frequency in molecular crystals, H. S. Gutowsky and D. W. McCall—548
Zeeman splitting of nuclear quadrupole levels in cuprite, Henry L. Cox, Jr., and Dudley Williams—633(L)

Nuclear Resonance (see Magnetic Resonance)

Nucleation

Nucleation of alumina at high supersaturations and subsequent recrystallization, G. W. Sears and R. C. DeVries—93

Optical Activity

Optical rotation of oriented helices. II. Calculation of the rotatory dispersion of the α- helix, Ignacio Tinoco, Jr., and Robert W. Woody—461

Phase Transitions

Composition limits of stability of PbTe, R. F. Brebrick and R. S. Allgaier—1826
Erratum. Theory of phase transitions in solid heavy methane, Hubert M. James and Thomas A. Keenan [J. Chem. Phys. **31**, 12 (1959)]—1877(L)

Phosphors

Effect of deuterium substitution on the lifetime of the phosphorescent triplet state of naphthalene, Clyde A. Hutchison, Jr., and Billy W. Mangum—1261(L)
Emission of activated cadmium selenide phosphors, M. Avinor and G. Meijer—1456
Phosphorescence of nitrogen and nitrogen-argon deposited films at 4.2°K, H. P. Broida and R. W. Nicholls—623(L)
Visible emission of nickel-activated CaS, M. Avinor—621(L)

Photochemistry

Becquerel photovoltaic effect in binary compounds, Richard Williams—1505
New phototropic substance and its electron spin resonance, Taro Hayashi, Koko Maeda, Shoji Shida, and Kazuo Nakada—1568(L)
Nitrogen chained compounds as intermediates in the photolysis of solid HN_3, Harold A. Papazian—456
Photochemical evidence for triplet state quenching by paramagnetic species, William M. Moore, George S. Hammond, and Robert P. Foss—1594(L)
Photochromotropism of *gamma*-(2,4-dinitrobenzyl)-pyridine in solution, Harry S. Mosher, Clark Souers, and R. Hardwick—1888(L)
Photolysis of ammonia in a solid matrix at low temperatures, O. Schnepp and K. Dressler—1682
Photooxidation of biacetyl, Gerald B. Porter—1587(L)
Rate constants at low concentrations. V. The mechanism of reaction of ozone with photolyzing nitrogen dioxide in the presence of excess oxygen, H. W. Ford, G. J. Doyle and N. Endow—1256
Steady state studies by EPR on the photodissociation of some alkyl hydroperoxides, L. H. Piette and W. C. Landgraf—1106
Transient species in the flash photolysis of halogens in solution, N. K. Bridge—945(L)

Photoconductivity

Electrical properties of organic solids. I. Kinetics and mechanism of conductivity of metal-free phthalocyanine, Gordon Tollin, David R. Kearns, and Melvin Calvin—1013
Electrical properties of organic solids. II. Effects of added electron acceptor on metal-free phthalocyanine, David R. Kearns, Gordon Tollin, and Melvin Calvin—1020

Polymers

Critical opalescence of polystyrene solutions, P. Debye, H. Coll and D. Woermann—939(L)
Dielectric properties of linear polyamides, David W. McCall and Ernest W. Anderson—237
Diffusion of impurities in amorphous polymers, A. W. Lawson—131
Dimensions of long-chain molecules with restricted internal rotation and variable bond length and angle, William J. Taylor—146
Effects of gases on irradiated polyvinyl chloride as studied by electron spin resonance, Zenichiro Kuri, Hisashi Ueda, and Shoji Shida—371
Energy requirements of mechanical shear degradation in concentrated polymer solutions, A. B. Bestul—350
Heterogeneous nature of the reaction in radiation-induced solid state polymerization of acrylamide, George Adler and Walter Reams—1698
Hydrogen ion titration curve of a polynucleotide capable of undergoing a helix-coil transition, R. F. Steiner—215
Inhomogeneous field method for the study of large polarizable particles, Alfred Prock and Gladys McConkey—224
Kinetics of the surface degradation of polymethylmethacrylate, R. F. Chaiken, W. H. Andersen, M. K. Barsh, E. Mishuck, G. Moe, and R. D. Schultz—141
Light scattering by anisotropic inhomogeneities in thin polymer films under strain. I. Simple elongation, Hari L. Bhatnagar—674
Method for calculating average molecular weights and molecular weight distributions of polymeric materials from sedimentation equilibrium experiments, Hiroshi Fujita—1739
Note on the infrared dichroism of axially oriented polymers, S. Krimm—313(L)
On the radiation-induced gas-phase polymerizations of acetylene and benzene, A. Russell Jones—953(L)
Proton magnetic resonance studies of some silicones, Hazime Kusumoto, Ian J. Lawrenson, and H. S. Gutowsky—724
Sedimentation of polydisperse macromolecules, Prem R. Gupta and D. A. I. Goring—1890(L)
Statistics of isotactic deformable chains with interdependent internal rotations, V. Magnasco and C. Rossi—1881(L)
Theory of dilute polymer solution. III. Heterogeneous polymer, Hiromi Yamakawa and Michio Kurata—1852
Unperturbed chain dimensions of polymeric chains, C. A. J. Hoeve—888

Proteins

Optical rotation of oriented helices. II. Calculation of the rotatory dispersion of the α helix, Ignacio Tinoco, Jr., and Robert W. Woody—461
Proton relaxation times in protein complexes of paramagnetic ions, Arnold Wishnia—871

Quadrupole Resonance (see Nuclear Quadrupole Resonance)

Mass spectrometric investigation of the sublimation of molybdenum dioxide, R. P. Burns, G. DeMaria, J. Drowart, and R. T. Grimley—1363

Quantum Mechanics (see Mechanics, Quantum)

Nature of the free electron model. The case of the polyenes and poly-acetylenes, F. Bar, W. Huber, G. Handschig, H. Martin, and H. Kuhn—470
Nature of the free electron model. The simple case of the symmetric polymethines, H. Kuhn, W. Huber, G. Hanschig, H. Martin, F. Schäfer, and F. Bar—467

Radiation Chemistry

Alpha radiolysis of carbon monoxide with and without xenon, P. S. Rudolph and S. C. Lind—1572(L)
Correlation of molecular yields in hydrocarbon radiolyses with mass spectral data, Leon M. Dorfman and Myran C. Sauer, Jr.—1886(L)
Detection of short-lived transients in radiation chemistry, Max S. Matheson and Leon M. Dorfman—1870(L)
Dissociation of C_6H_6T following beta decay, Thomas A. Carlson—1234
Heterogeneous nature of the reaction in radiation-induced solid state polymerization of acrylamide, George Adler and Walter Reams—1698
Hydrogen formation in the radiation chemistry of water, H. A. Mahlman—601
Intermolecular isotope effect in recoil tritium reactions with hydrogen, J. K. Lee, Burdon Musgrave, and F. S. Rowland—1266(L)
Isomeric effects in fragmentation by beta decay: monotritiated propanes and toluenes, S. Wexler, G. R. Anderson, and L. A. Singer—417
Mass spectrometric studies of ionic intermediates in the alpha-particle radiolysis of ethylene, C. E. Melton and P. S. Rudolph—1127
On the radiation-induced gas-phase polymerizations of acetylene and benzene, A. Russell Jones—953(L)
Possible ion-molecule reaction in the gamma radiolysis of C_3 hydrocarbons, Kang Yang—1892(L)
Radiation damage in organic crystals. II. Electron spin resonance of $(CO_2H)CH_2CH(CO_2H)$ in β-succinic acid, Chonon Heller and Harden M. McConnell—1535
Radiolysis and bond stability of squalane, Hideo Yamazaki and Shoji Shida—950(L)
Reactions initiated by the β decay of tritium. III .The tritium-cyclopropane system, Preston L. Gant and Kang Yang—1757

Radiochemistry

Annihilation of positrons in organic liquids, C. R. Hatcher, T. W. Falconer, and W. E. Millett—28
Electron spin resonance of an irradiated single crystal of alanine: Second-order effects in free radical resonances, Ichiro Miyagawa and Walter Gordy—255
Exchange of radiochlorine between hydrogen chloride and carbon tetrachloride. The "red form" of solid hydrogen chloride, Irving M. Pearson and Clifford S. Garner—1214
Some observations on atomic exchange in nitric oxide, W. Spindel and Marvin J. Stern—1579(L)

Raman Spectra

Indium sulfate: Raman spectra and incomplete dissociation, B. McCarroll and M. H. Lietzke—1277(L)
Infrared and raman spectra of fluorinated ethanes. XII. 1,1,2,2,-Tetrafluoroethane, Peter Klaboe and J. Rud Nielsen—899
Raman intensities of the A_1 lines of oxyanions, George W. Chantry and Robert A. Plane—319
Raman spectra of metal carbonyl compounds II. Raman spectra, structure, and force constants of cobalt and iron tetracarbonylate anions, H. Stammreich, K. Kawai, Yara Tavares, P. Krumholz, J. Behmoiras, and S. Bril—1482
Raman spectrum and structure of perchlorylfluoride, F. X. Powell and E. R. Lippincott—1883(L)
Temperature dependence of Raman intensities, G. W. Chantry—222

Reaction Rates (see Kinetics of Reaction)

Refractive Indexes

Refractive index and dispersion of the benzene carbon tetrachloride system, Scott E. Wood and Charles H. Masland—1385

Refractive index and dispersion of the benzene-methanol system, Scott E. Wood, Sidney Langer, and Rubin Battino—1389
Streaming birefrigence and optical relaxation time of vanadium pentoxide salts, William T. Foreman—277

Rotation

Erratum. Theory of phase transitions in solid heavy methane, Hubert M. James and Thomas A. Keenan [J. Chem. Phys. **31,** 12 (1959)]—1877(L)
Molecular rotation and dielectric relaxation in a crystal lattice, Colin Clemett and Mansel Davies—316(L)
Potential energy barrier to rotation in methyl nitrite measured by proton magnetic resonance, Peter Gray and L. W. Reeves—1878(L)

Scattering

Elastic and inelastic scattering of low-velocity D^+ and D_2^+ in deuterium, W. H. Cramer and A. B. Marcus—186

Semi-conductors

Effect of chemical etches on the fast germanium surface states, Y. Margoninski—1791
Organic semiconductors. I. The electrical conductivity and Seebeck coefficient of the *p*-phenylenediamine-chloranil complex, Mortimer M. Labes, Robert Sehr, and Monisha Bose—1570(L)

Shock Waves (see also Detonation)

Emission of diffuse bands of sodium behind shock fronts, H. Takeyama and A. Guttman—634(L)
Kinetic studies of hydroxyl radicals in shock waves. III. The OH concentration maximum in the hydrogen-oxygen reaction, Garry L. Schott—710
Luminosity of shock waves in xenon, John N. Bradley—1875(L)
Reply to: Luminosity of shock waves in xenon, Walter Roth—1876(L)

Solutions (see also Liquids)

Theory of dilute polymer solution. III. Heterogeneous polymer, Hiromi Yamakawa and Michio Kurata—1852
Vapor-liquid equilibrium of benzene-2,2,4-trimethylpentane mixtures, Stanley Weissman and Scott E. Wood—1152

Spectra (see Absorption Spectra, Emission Spectra, Fluorescence, Raman Spectra)

Sputtering

Extended theory of sputtering, Don E. Harrison, Jr.—1336
Sputtering of silver of light ions with energies from 2 to 12 kev, Finn Grønlund and Walter J. Moore—1540

Statistical Mechanics (see Mechanics, Statistical)

Surface Phenomena

Chemisorption of CO on nickel using a radioactive tracer, A. D. Crowell—1576(L)
Dislocation etching, Gerald W. Sears—1317
Interaction of hydrogen with tungsten, T. W. Hickmott—810
Interactions between molecules adsorbed on a surface, Oktay Sinanoğlu and Kenneth S. Pitzer—1279
Surface migration of nitrogen on tungsten, Gert Ehrlich and F. G. Hudda—942(L)
Variation with temperature of the recombination of oxygen atoms on a platinum surface, George C. Fryburg and Helen M. Petrus—622(L)

Thermal Conductivity

Kinetic theory of moderately dense rigid sphere fluids. III. The formulation and solution of the transport equation for binary mixtures, Robert A. Harris and Stuart A. Rice—538
"Some remarks on the paper 'Thermal conductivity of liquid ozone' by T. E. Waterman, D. P. Kirsh, and R. I. Brabets," H. Ziebland—303(L)
Thermal conductivity of binary mixtures of diatomic and monatomic gases, B. N. Srivastava and A. K. Barua—427
Thermal conductivity of condensed films: methane, John T. Clarke and Ralph Gorden, Jr.—705
Thermal conductivity of gas mixtures in chemical equilibrium. II, Richard S. Brokaw—1005
Thermal conductivity of helium and hydrogen at high temperatures, Normand C. Blais and Joseph B. Mann—1459
Thermal conductivity of liquid ozone, [J. Chem. Phys. **29,** 905, (1958)], T. E. Waterman, D. P. Kirsh, and R. I. Brabets—304(L)

Thermal Diffusion

Role of thermal diffusion in the electrolytic separation of isotopes in liquid metals, Paul C. Mangelsdorf, Jr.—293
Thermal diffusion of ternary mixtures, A. E. de Vries and M. F. Laranjeira—1714

Thermodynamic Properties

Calculation of the heat of solution of copper in germanium from diffusion measurements, M. Tanenbaum—1125
Closed crucible—a new technique in high temperature chemistry. Its application to tantalum and molybdenum oxides, E. David Cater, Ernest R. Plante, and Paul W. Gilles—1269(L)
Composition limits of stability of PbTe, R. F. Brebrick and R. S. Allgaier—1826
Crystalline transitions and mechanical resonance dispersion in vinyl and ethyl stearate, Edwin R. Fitzgerald—771
Enrichment of nitrogen-15 by chemical exchange of NO with liquid N_2O_3, E. U. Monse, W. Spindel, Lois Nash Kauder, and T. I. Taylor—1557
Equilibrium and transport properties of the carbon tetrachloride-methylene chloride system, Charles R. Mueller and Albert J. Ignatowski—1430
Heat capacity of terbium from 1.4° to 4.0° Kelvin, R. M. Stanton, L. D. Jennings, and F. H. Spedding—630(L)
Influence of dipole-dipole coupling on the specific heat of a paramagnetic salt, R. I. Joseph and J. H. Van Vleck—1573(L)
Ionization of strong electrolytes. VIII. Temperature coefficient of dissociation of strong acids by proton magnetic resonance, G. C. Hood and C. A. Reilly—127
Lattice dynamics and heat capacity of indium, L. J. Slutsky and Ann Livingston—1093
Mass spectrometric study of gaseous molybdenum, tungsten and uranium oxides, G. DeMaria, R. P. Burns, J. Drowart, and M. G. Inghram—1373
Potential energy constants, rotational distortion constants, and thermodynamic properties for NH_3, ND_3, PH_3, PD_3, AsH_3, and AsD_3. S. Sundaram, Frank Suszek, and Forrest F. Cleveland—251
Potential energy constants, rotational distortion constants, and thermodynamic properties of $B^{11}H_3CO$, $B^{11}D_3CO$, $B^{10}H_3CO$, and $B^{10}D_3CO$, S. Sundaram and Forrest F. Cleveland—166
Rational approximations for the Debye functions, Henry C. Thacher, Jr.—638(L)
Refractive index and dispersion of the benzene carbon tetrachloride system, Scott E. Wood and Charles H. Masland—1385
Refractive index and dispersion of the benzene-methanol system, Scott E. Wood, Sidney Langer, and Rubin Battino—1389
Stabilities of the gaseous molecules, BiSe, BiTe, and SbTe, Richard F. Porter and C. W. Spencer—943(L)

Thermodynamic Properties (continued)

Thermal decomposition of niobium and tantalum monocarbides, Charles P. Kempter and M. R. Nadler—1477

Thermodynamic properties of C_2, Robert L. Altman—615(L)

Thermodynamic properties of nonstoichiometric urania-thoria solid solutions, S. Aronson and J. C. Clayton—749

Thermodynamic properties of sulfuryl fluoride from 12°K to its boiling point. Entropy from molecular and spectroscopic data, F. J. Bockhoff, R. V. Petrella, and E. L. Pace—799

Thermodynamic properties of trifluoromethanethiol from 12°K to its boiling point. Entropy from molecular and spectroscopic data, R. E. Dininny and E. L. Pace—805

Thermodynamic study of Al_2O_3 using a mass spectrometer, J. Drowart, G. DeMaria, R. P. Burns, and M. G. Inghram—1366

Vapor-liquid equilibrium of benzene-2,2,4-trimethylpentane mixtures, Stanley Weissman and Scott E. Wood—1152

Vapor pressure of the neon isotopes, Etienne G. Roth and Jacob Bigeleisen—612(L)

Velocity of compressional waves in liquid hydrogen fluoride and some thermodynamic properties derived therefrom, Robert T. Lagemann and C. Harry Knowles—561

Vibrational spectra of OsF_6 and PtF_6, Bernard Weinstock, Howard H. Claassen, and John G. Malm—181

Thermodynamics

Chemical equilibrium in multicomponent, polyphase systems, Frederick P. Boynton—1880(L)

Computation of the equilibrium composition of burnt gases, Robert L. Potter and Wouter Vanderkulk—1304

Thermodynamic excess functions for electrolyte solutions, Harold L. Friedman—1351

Thermodynamic inequalities for elastic solids, James C. M. Li and Hsiao S. Kiang—1644

Variational principles for chemical equilibrium, W. S. Dorn—1490

Thermoluminescence

Comments on "Thermoluminescent properties of calcite," W. L. Medlin—943(L)

Transport Phenomena

Equilibrium and transport properties of the carbon tetrachloride-methylene chloride system, Charles R. Mueller and Albert J. Ignatowski—1430

Principle of corresponding states for transport properties, Eugene Helfand and Stuart A. Rice—1642

Redetermination of the intermolecular potential for krypton, Edward A. Mason—1832

Transport in dilute gases and chemical forces, Richard K. Osborn—1817

Valence and Chemical Bond

Appearance potential study of tetrafluorohydrazine, E. Dan Loughran and Charles Mader—1578(L)

Calculation of the dissociation energy of NH by a semiempirical interpolative method, Audrey L. Companion and Frank O. Ellison—1131

Group electronegativities from bond lengths, Henry A. Bent—1582(L)

On the effects of intramolecular van der Waals forces, L. S. Bartell—827

Some notes on molecular complexes between iodine and polynuclear aromatic hydrocarbons, Mihir Chowdhury and Sandha Basu—1450

Viscosity

Rotational diffusion constant of a cylindrical particle, S. Broersma—1626

Viscous force constant for a closed cylinder, S. Broersma—1632

X-ray Diffraction

Cluster formation in perfluoroheptane-*i*-octane systems near the consolute temperature, George W. Brady—45

Density of the bonding electrons in diamond, G. B. Carpenter—525

Determination of atomic distributions in liquid lead-bismuth alloys by neutron and x-ray diffraction, Paul C. Sharrah, John I. Petz, and Rogert F. Kruh—241

Polarized octahedra in barium tetratitanate, David H. Templeton and Carol H. Dauben—1516

Soundness of the lattice of zone-refined aluminum, M. E. Straumanis and T. Ejima—629(L)

Author Index to Volume 33

(References with (L) are to Letters to the Editors.)

Ackerman, Marcel, Fred E. Stafford, and Jean Drowart. Mass spectrometric determination of the dissociation energies of the molecules AgAu, AgCu, and AuCu—1783

Adams, G. B., Jr. (see Graven, W. M.)—954(L)

Albrecht, Andreas C. "Forbidden" character in allowed electronic transitions—156

——On the assignment of the lowest triplet state in benzene—937(L)

——Vibronic calculations in benzene—169

Alder, B. J. and T. E. Wainwright. Studies in molecular dynamics. II. Behavior of a small number of elastic spheres—1439

——(see Hrostowski, H. J.)—980

Allnatt, Alan R. and Stuart A. Rice. On the dynamical theory of diffusion in crystals. V. Random-walk treatment of the heat of transport—573

Allport, John J. (see Robben, Frank)—630(L)

Ameer, George (see Babrov, Harold)—145

Amme, Robert C. and Sam Legvold. Vibrational transitions and the intermolecular potential—91

——(see Calvert, J. B.)—1270(L)

Anderson, D. H. (see Brown, Thomas H.)—720

Anderson G. R. (see Wexler, S.)—850

Anderson, M. E., G. E. Pake, and T. R. Tuttle, Jr. Proton resonance in diphenyl picryl hydrazyl—1581(L)

——, **P. J. Zandstra, and T. R. Tuttle, Jr.** Proton resonance shifts in pyrene mononegative ion at 4.2°K—1591(L)

Arai, S., S. Sato, and S. Shida. Mercury photosensitized decomposition of cyclohexane at high temperatures—1277(L)

Arai, Tadashi. Theorem on separability of electron pairs—95

Arase, Elizabeth M. and Robert D. Hatcher. Frequency distribution and the specific heat of NaCl at low temperatures—1703

Arking, A. (see Bradley, R. C.)—764

Aronson, J. R., R. C. Lord, and D. W. Robinson. Far infrared spectrum and structure of disiloxane—1004

Auer, P. L. and S. Tamor. Statistical mechanics of the nonuniform gas—1426

Babrov, Harold, George Ameer, and William Benesch. Molecular collision cross sections from infrared absorption measurements—145

Bak, Børge and Lise Hansen-Nygaard. Molecular structure correlations—418

Baldeschwieler, John D. and George C. Pimentel. Light-induced *cis-trans* isomerization of nitrous acid formed by photolysis of hydrazoic acid and oxygen in solid nitrogen—1008

Baldwin, H. W. and H. Taube. Flow adaptation of the isotopic dilution method for the study of ionic hydration—206

Baldwin, Robert L. (see Kirkwood, John G.)—1505

Balwit, J. S. (see Lawton, Elliott, J.)—395, 405

Banks, E. (see Mandel, G.)—192

Banyard, K. E. Diamagnetism as a test of wave functions for some simple molecules—832

Bartell, L. S., Kozo Kuchitsu, and R. J. de Neui. Equilibrium bond lengths in methane and deuteromethane as determined by electron diffraction and spectroscopic methods—1254(L)

Basile, L. J. and A. Weinreb. Transfer of excitation energy in solid solutions of anthracene-polystyrene and 9,10-diphenylanthracene-polystyrene—1028

Basu, Sadhan (see Chakravorty, Animesh)—1266(L)

——(see Majumdar, Dilip Kuman)—1199

Bauer, Ernest and Morris Salkoff. Three-body recombination of oxygen atoms—1202

Bauer, S. H., Tadashi, Ino, and Richard F. Porter. Molecular structure of lithium chloride dimer. Thermodynamic functions of Li_2X_2(X = Cl, Br, I)—685

——(see LaVilla, Robert E.)—182

Bauman, R. P. (see Mandel, G.)—192

Beam, John E. and H. L. Davis. Energy levels of a slightly asymmetric top—1255(L)

Bearman, Richard J. and Peter F. Jones. Statistical mechanical theory of the viscosity coefficients of binary liquid solutions—1432

Beaumont, D. W. (see Scatchard, G.)—1292

Beckel, Charles L. Power series expansions of vibrational potentials. I. The Heitler-London potential for H_2—1885(L)

——(see Finn, Edward J.)1887(L)

Beers, D. S. (see Bradley, R. C.)—764

Begun, G. M. and W. H. Fletcher. Partition function ratios for molecules containing nitrogen isotopes—1083

Belles, Frank E. (see Brabbs, Theodore A.)—307(L)

Benesch, William (see Babrov, Harold)—145

Bennett, R. G. (see Dayton, I. E.)—179

Benson, R. E. (see Phillips, W. D.)—607(L)

Benson, Sidney W. On the existence of energy chains in ozone decomposition—939(L)

—— On the existence of polyoxides of hydrogen—306(L)

Bent, Henry A. Bond shortening by electronegative substituents—1260(L)

—— Correlation of bond shortening by electronegative substituents with orbital hybridization—1259(L)

—— Electronegativities from comparison of bond lengths in AH and AH^+—1258(L)

—— Explanation of the nonadditivity of bond lengths—304(L)

Bergmann, Ernst D. (see Yaroslavsky, Samuel)—635(L)

Berkowitz, Joseph, David J. Meschi, and William A. Chupka. Heterogeneous reactions studied by mass spectrometry. II. Reaction of Li_2O(s) with H_2O(g)—533

—— (see Meschi, David J.)—530

Berlman, Isadore B. Efficiency of energy transfer in a solution of PPO in xylene—1124

Bernheim, Robert A. and T. P. Das. Relation between the proton hyperfine interaction and the C^{13}—H^1 spin-spin coupling in free radicals—1813

—— (see Brown, Thomas H.)—1593(L)

Bernstein, Richard B. Quantum mechanical (phase shift) analysis of differential elastic scattering of molecular beams—795

—— (see Hoffman, Morton Z.)—526

—— (see Schumacher, Hugo)—584

Bestul, A. B. and D. H. Blackburn. Condensation coefficient of arsenic trioxide glass—1274(L)

Bigeleisen, Jacob. Vapor pressures and related thermodynamic properties of the isotopic nitric oxide molecules—1774

Birdwell, B. F. and George W. Crawford. Gamma radiolysis of propane—928

Birtley, W. B. (see Rank, D. H.)—323, 327

Blackburn, D. H. (see Bestul, A. B.)—1274(L)

Blais, Normand C. and Joseph B. Mann. Ionization of Cu, Ag, and Au by electron impact—100

Blauer, G. and H. Linschitz. Metastable states of acridine orange in solution—937(L)

Blinder, S. M. Orientation dependence of magnetic hyperfine structure in free radicals—748
Blume, Philip (see Ettinger, Raymond)—1597(L)
Boggs, J. E., A. P. Deam, and J. M. King. Temperature variation of the linewidth in nonresonant microwave absorption—1852
Bolling, G. F. Some thermal data for Bi_2Te_3—305(L)
Bose, Monisha (see Labes, Mortimer M.)—868
Brabbs, Theodore A., Steven A. Zlatarich, and Frank E. Belles. Limitations of the reflected-shock technique for studying fast chemical reactions—307(L)
Bradley, R. C., A. Arking, and D. S. Beers. Secondary positive ion-emission from platinum—764
Brady, George W. Structure in ionic solutions. IV—1079
Bray, P. J. (see Hooper, H. O.)—334
—— (see Negita, Hisao)—1876(L)
Brinkley, S. R., Jr. (see Richardson, J. M.)—1467
Brion, H., C. Moser, and M. Yamazaki. Erratum: Electronic structure of nitric oxide—1871(L)
Britton, Doyle and Z Z. Hugus, Jr. Nuclear spin conservation in ortho-para hydrogen conversion—1830
—— (see Lipscomb, William N.)—275
Broadhurst, Martin G. Theoretical dielectric behavior of an ethyl stearate-heneicosane mixture—221
—— **and Edwin R. Fitzgerald.** Dielectric behavior and crystal structure of ethyl and vinyl stearate—210
Brout, R. (see Buff, Frank P.)—1417
Brown, David A. Metal-metal bonding in dicobalt hexacarbonyl diphenylacetylene—1037
Brown, L. L. and J. S. Drury. The single-state fractionation factor for the system oxygen vs cobalt di(salicylal)-ethylenediimine-oxygen—1889(L)
Brown, M. G. Electronegativity effects of hybridized carbon atoms—1881(L)
Brown, Thomas H., D. H. Anderson, and H. S. Gutowsky. Spin densities in organic free radicals—720
——, **Robert A. Bernheim, and H. S. Gutowsky.** Temperature dependence of proton relaxation times in aqueous solution of paramagnetic ions. II. $CrCl_3$—1593(L)
Broyles, A. A. Radial distribution functions from the Born-Green integral equation—456
Büchler, Alfred (see Klemperer, William)—1534
Buff, Frank P. and R. Brout. Some tests of the superposition approximation in the liquid phase—1417
Bumble, S. and J. M. Honig. Utilization of order-disorder theory in physical adsorption. I. Fundamental equations—424
Bunker, Don L. Erratum: Mechanics of atomic recombination reactions—617(L)
Burns, John H., Darrell W. Osborne, and Edgar F. Westrum, Jr. Heat capacity of uranium tetrafluoride from 1.3° to 20°K and the thermodynamic functions to 300°K. Calorimeter for the range 0.8° to 20°K—387
Burns, R. P. (see Grimley, R. T.)—308(L)

Cahn, J. W. (see Sears, G. W.)—494
Calvert, J. B. and R. C. Amme. Multiple velocity dispersion in halomethane gas mixtures—1270(L)
Calvo, Crispin. On the molecular nature of the dielectric anomalies in thiourea—1720
Cann, John R. Effect of binding of ions and other small molecules on protein structure. VIII. On isomerization of serum albumin in acidic media—1410
Carlin, R. L. (see Piper, T. S.)—608(L), 1208
Carlson, F. F., G. J. King, and B. S. Miller. Hyperfine structure of *F*-center spin resonance in sodium azide—1266(L)
Carpenter, D. K. (see Krigbaum, W. R.)—921
Carpenter, G. B. Density of the bonding electrons in diamond—300(L)
Castellan, Gilbert W. (see Singer, Sister Judith Mary)—633(L)
Chaiken, R. F. Comments on hypervelocity wave phenomena in condensed explosives—760
Chakravorty, Animesh and Sadhan Basu. Crystal spectra of chromium *tris*-acetyl acetone—1266(L)
Chan, Sunney I., John Zinn, Jose Fernandez, and William D. Gwinn. Trimethylene oxide. I. Microwave spectrum, dipole moment, and double minimum vibration—1643
——, **John Zinn, and William D. Gwinn.** Double minimum vibration in trimethylene oxide—295(L)
Chantry, George W. and Robert A. Plane. Bond polarizability components—634(L)
—— **and R. A. Plane.** CN stretching bands in the Raman spectra of some group Ib and group IIb complex cyanides—736
Chesnut, D. B. Cl^{35} NMR contact shifts in aqueous cobaltous chloride solutions—1234
—— **and G. J. Sloan.** Paramagnetic resonance absorption of triphenylmethyl—637(L)
Choi, Sang-Il and John Ross. Quantum corrections for transport coefficients—1324
Chupka, William A. (see Berkowitz, Joseph)—533
—— (see Meschi, David J.)—530
Cimino, A. E. Molinari, and G. G. Volpi. Comment on the homogeneous exchange reaction between hydrogen and deuterium—616(L)
Claassen, Howard H. and Bernard Weinstock. Search for a Jahn-Teller effect in IrF_6—436
Cleveland, Forrest F. (see Gilbert, Robert L.)—1872(L)
Clinton, William L. Forces in molecules. I. Application of the virial theorem—1603
—— Note on the internal rotation problem—632(L)
Coggeshall, Norman D. Quantitative relations in the mass spectra of *n*-paraffins—1247
Cohen, Arthur (see Strehlow, Roger A.)—618(L)
Colburn, Charles B. and Frederic A. Johnson. Strength of the N—N bond in tetrafluorohydrazine—1869(L)
Cole, R. H. (see Johnston, D. R.)—1310
Coleman, Bernard D. and Clifford Truesdell. On the reciprocal relations of Onsager—28
Coll, H. (see Debye, P.)—1745
Connelly, B. T. (see Porter, Gerald B.)—81
Conradi, J. J. (see Parker, D. J.)—629(L)
Coogan, C. K. (see Stalinski, B.)—933(L)
Cook, Denys, Stephen J. Kuhn, and George A. Olah. Infrared spectra of complexes of NO_2F with BF_3, PF_5, and SbF_5—1669
Crapo, L. M. and C. H. Sederholm. NMR analysis of CF_3CF_2CFICl: Example of an unexpected spin-coupling constant—1583(L)
Crawford, George W. (see Birdwell, B. F.)—928
Crowe, R. W. and J. C. Devins. Sparking potential and molecular structure of unsaturated hydrocarbon gases—413
—— (see Devins, J. C.)—1578(L)
Cubicciotti, Daniel. Erratum: Lattice energies of the alkali halides and the electron affinities of the halogens—1579(L)
Curtiss, C. F. (see Hollinger, Henry B.)—1386
Cvetanović, R. J. Temperature dependence of the rates of addition of oxygen atoms to olefins—1063

Dahler, J. S. (see O'Toole, J. T.)—1487, 1496
Dailey, B. P. Halogen bond character in the alkyl halides—1641
Dalby, F. W. (see Dayton, I. E.)—179
Danti, Alfred, W. J. Lafferty, and R. C. Lord. Far infrared spectrum of trimethylene oxide—294(L)
Das, T. P. and A. Mukherjee. Variational calculation of magnetic hyperfine interaction. Nitrogen atom—1808
—— (see Bernheim, R. A.)—1813
Davidson, D. W. (see Grant, R. F.)—1712

Davidson, Ernest R. First excited $^1\Sigma_g^+$ state of H_2. A double-minimum problem—1577(L)
Davies, D. W. Separation theorem for degenerate eigenvalues—781
Davis, H. L. (see Beam, John E.)—1255(L)
Dayton, I. E., F. W. Dalby, and R. G. Bennett. Radiative lifetime of the $B\ ^2\Sigma^+$ state in N_2O^+—179
Deam, A. P. (see Boggs, J. E.)—1852
Dearman, H. H. and H. M. McConnell. Spin densities in several odd alternant radicals—1877(L)
—— (see McLachlan, A. D.)—65
Debye, P., H. Coll, and D. Woermann. Critical opalescence of polystyrene in cyclohexane—1745
deKowalewski, Dora G. (see Kowalewski, Valdemar J.)—1793
deNeui, R. J. (see Bartell, L. S.)—1254(L)
Devins, J. C. and R. W. Crowe. Electric strength of methane and deuteromethane—1578(L)
—— (see Crowe, R. W.)—413
Devlin, J. P. (see Hisatsune, I. C.)—714
Dibeler, Vernon H. (see Herron, John T.)—1595(L)
Dickey, Fred P. (see Rogge, William H.)—453
Dieke, G. H. and D. F. Heath. Structure of the infrared Y bands of N_2—432
—— (see Varsanyi, F.)—1616
Dixon, J. A. (see Nelson, R. R.)—1755
Douglass, Dean C. (see McCall, David W.)—777
Dowling, Jerome M. (see Gilbert, Robert L.)—1872(L)
Dows, David A. Infrared spectra of crystalline CD_3Cl and CD_3Br—1742
Dravnieks, F. (see Reitz, D. C.)—1880(L)
Dressler, K. and O. Schnepp. Absorption spectra of solid methane, ammonia, and ice in the vacuum ultraviolet—270
—— (see Schnepp, O.)—49
Drickamer, H. G. (see Minomura, S.)—290
—— (see Zahner, J. C.)—1625
Drowart, Jean (see Ackerman, Marcel)—1783
Drury, J. S. (see Brown, L. L.)—1889(L)
—— (see Palko, A. A.)—779
Dubois, Jean T. Primary processes in the gaseous photolysis of polyatomic molecules. I. Biacetyl—229
Dudek, Gerald O. H^1—P^{31} spin coupling in phosphate esters—624(L)
Dunlop, Peter J. (see Kirkwood, John G.)—1505
Dupuis, Marc, Robert Mazo, and Lars Onsager. Surface specific heat of an isotropic solid at low temperatures—1452

Eastman, D. P. (see Rank, D. H.)—323, 327
Edlén, B. Isoelectronic extrapolation of electron affinities—98
Ehrlich, Gert and F. G. Hudda. Observation of adsorption on an atomic scale—1253(L)
Eisenstein, J. C. Spectrum of ReF_6—1530
Eisner, Melvin (see Mitchell, Richard W.)—86
Elias, L. (see Morgan, J. E.)—930(L)
Elliott, Norman. Interatomic distances in FeS_2, CoS_2, and NiS_2—903
Elliott, Reed O. (see Kempter, Charles P.)—837
Emerson, Merle T., Ernest Grunwald, and Robert A. Kromhout. Proton-transfer studies by nuclear magnetic resonance. I. Diffusion control in the reaction of ammonium ion in aqueous acid—547
Emslie, Alfred G. (see Klemperer, William)—1534
Epstein, A. and B. S. Wildi. Erratum: Electrical properties of poly-copper phthalocyanine—618(L)
Erikson, Ted A. and R. J. Tykodi. Thermodynamics, stationary states, and steady-rate processes. VI. Forced vaporization of selected liquids—46
Ettinger, Raymond, Philip Blume, Andrew Patterson, Jr., and Paul C. Lauterbur. C^{13} chemical shifts in CO and CO_2—1597(L)
Evans, J. C. (see Scherer, James R.)—314(L)
Evers, E. Charles. On the structure of dilute solutions of metals—618(L)
Evett, Arthur A. Second-order perturbation calculation of the hindered rotator model for adsorbed hydrogen—789

Fallon, Robert J., Joseph T. Vanderslice, and Edward A. Mason. Erratum: Potential curves for HF and LiH—944(L)
—— (see Tobias, Irwin)—1638
Fernandez, Jose (see Chan, Sunney I.)—1643
Fessenden, Richard W. and Robert H. Schuler. EPR observation of steady-state ethyl radical concentration in radiolysis of liquid ethane—935(L)
Finn, Edward J. and Charles L. Beckel. Power series expansions of vibrational potentials. II. Two classical potentials for ionic molecules—1887(L)
Fite, Wade L. (see Stebbings, R. F.)—1226
Fitts, Donald D. (see Kirkwood, John G.)—1317
Fitzgerald, Edwin R. (see Broadhurst, Martin G.)—210
Fixman, Marshall. Density correlations, critical opalescence, and the free energy of nonuniform fluids—1357
—— Osmotic pressure of moderately concentrated polymer solutions—370
—— Ultrasonic attenuation in the critical region—1363
Fletcher, W. H. (see Begun, G. M.)—1083
Flood, E. A. (see Kuroda, H.)—952(L)
Flubacher, P., A. J. Leadbetter, and J. A. Morrison. Heat capacity of ice at low temperatures—1750
Forsén, S. and A. Rupprecht. Increasing the intensity of C^{13} NMR signals by a flowing sample method—1888(L)
Fotland, Richard A. Photoconductivity and photolysis in cadmium iodide—956(L)
Fox, J. W. and A. C. H. Smith. Viscosity of mixtures of hydrogen and water vapor at 295°K—623(L)
Fox, R. E. Multiple ionization in argon and krypton by electron impact—200
Freeman, G. R. Energy transfer in liquid hydrocarbons excited by γ rays—957(L)
—— Radiolysis of cyclohexane. I. Pure liquid cyclohexane and cyclohexane-benzene solutions—71
Frey, H. M. (see Harrington, R. E.)—1271(L)
Friedman, E. and W. Low. Effect of thermal treatment of paramagnetic resonance spectra of rare earth impurities in calcium fluoride—1275(L)
Fries, R. J. (see Kempter, C. P.)—1873(L)
Frisch, H. L. (see Helfand, E.)—1379
Frosch, R. P. (see Wright, M. R.)—934(L)
Fujiwara, Yuzuru (see Kuri, Zenichiro)—1884(L)
Fumi, F. G. and M. P. Tosi. Madelung constants of the cubic Perovskite structures—1

Gans, Paul J. Open first-order stochastic processes—691
Garrett, C. G. B. Quantitative considerations concerning catalysis at a semiconductor surface—966
Geller, S. Crystal structure of β-Ga_2O_3—676
Geske, David H. (see Maki, August H.)—825
Giddings, J. Calvin and Spencer L. Seager. Rapid determination of gaseous diffusion coefficients by means of gas chromatography apparatus—1579(L)
Gilbert, Robert L., Edward A. Piotrowski, Jerome M. Dowling and Forrest F. Cleveland. Erratum and Addendum: Substituted methanes. XXIX. Vibrational spectra, potential constants, and calculated thermodynamic properties for dibromochlorofluoromethane and bromodichlorofluoromethane—1872(L)
Gilliam, O. R. (see Shuskus, A. J.)—622(L)
Glarum, Sivert H. Dielectric relaxation of isoamyl bromide—639
—— Dielectric relaxation of polar liquids—1371

Glasel, Jay A. Near-infrared absorption spectra of ortho- and para-H_2O in solid xenon and argon—252
Glew, David N. (see Walkley, John)—621(L)
Glick, R. E. and D. F. Kates. Quantum-mechanical approximations to chemical systems—308(L)
Gold, L. Peter (see Wharton, Lennard)—1255(L)
Golden, S. and H. C. Longuet-Higgins. On temporal evolution of isolated dynamical systems—1479
Goldfarb, Theodore D. and George C. Pimentel. Chemiluminescence of ethylene formed probably from methylene in an inert matrix—105
Golding, R. M. Ultraviolet and structural studies of polythionates—1666
Goodman, Lionel (see Hoyland, J. R.)—946(L)
—— See Krishna, V. G.)—381
Gordon, Alvin S. and James R. McNesby. On the isomerization of *n*-butyl radicals—1882(L)
Gordy, Walter (see Miyagawa, Ichiro)—1599
Gosting, Louis J. (see Kirkwood, John G.)—1505
Gouterman, Martin. A theory for the triplet-triplet absorption spectra of porphyrins—1523
Grad, Harold. On molecular chaos and the Kirkwood superposition hypothesis—1342
Grant, R. F., D. W. Davidson, and Peter Gray. Dielectric study of some liquid alkyl nitrites—1712
Graven, W. M., R. E. Salomon, and G. B. Adams, Jr. Absorption spectra of anodic niobium oxide films—954(L)
Gray, Peter (see Grant, R. F.)—1712
Green, H. S. (see Hurst, C. A.)—1059
Green, John W., Duncan E. Poland, and John L. Margrave. Thermodynamic properties of unipositive gaseous elemental ions—35
—— (see Iczkowski, Raymond P.)—1261(L)
Green, Melville S. On the theory of the critical point of a simple fluid—1403
Greenberg, J. and Leander J. Hallgren. Infrared absorption spectra of alkali metal nitrates and nitrites above and below the melting point—900
Grimley, R. T., R. P. Burns, and Mark G. Inghram. Mass-spectrometric study of the osmium-oxygen system—308(L)
Gruen, Dieter M. (see Satten, Robert A.)—1140
Grunwald, Ernest, Photios J. Karabatsos, Robert A. Kromhout, and E. Lee Purlee. Proton-transfer studies by nuclear magnetic resonance. II. Rate constants and mechanism for the reaction $CH_3NH_3^+ + OH_2 + NH_2CH_3$ in aqueous acid—556
—— (see Emerson, Merle T.)—547
Gschneidner, Karl A., Jr. (see Kempter, Charles P.)—837
Gunn, Stuart R. and Russell H. Sanborn. Heats of formation of BF_2Cl and $BFCl_2$—955(L)
Gutmann, Joel R. and Max Wolfsberg. Equilibrium in the exchange of tritium between ammonia and hydrogen and the zero-point energy difference between NH_3 and NH_2T—1592(L)
Gutowsky, H. S. (see Brown, Thomas H.)—720, 1593(L)
—— (see Schug, John C.)—843
—— (see Stalinski, B.)—933(L)
Gwinn, William D. (see Chan, Sunney I.)—295 (L), 1643
—— (see LeBlanc, Oliver H., Jr.)—598

Haake, C. H. (see Kemeny, G.)—783
Hall, G. G. Ambiguity in the determination of self-consistent bond orders—953(L)
Hallgren, Leander J. (see Greenberg, J.)—900.
Halsey, G. D., Jr. (see Volk, H.)—1132
Hansen, K. and D. F. Hornig. Thickness of shock fronts in argon—913
Hansen-Nygaard, Lise (see Bak, Børge)—418
Harrah, L. A. and D. W. Mayo. Rotational isomerism involving the 2-3 carbon-carbon bond of the l-alkenes—298(L)
Harrington, R. E., B. S. Rabinovitch, and H. M. Frey. Decomposition of activated *sec*-butyl radicals from different sources and unimolecular reaction theory—1271(L)
——, **B. S. Rabinovitch, and M. R. Hoare.** Collisional deactivation of vibrationally excited *sec*-butyl-d_1 radicals produced by chemical activation—744
Harris, Robert A. and Stuart A. Rice. Kinetic theory of the moderately dense rigid-sphere fluid. IV. Fluxes of matter, momentum, and energy in a mixture—1047
—— **and Stuart A. Rice.** Kinetic theory of the moderately dense rigid-sphere fluid. V. Relaxation in momentum space—1055
Harteck, Paul (see Mannella, Gene G.)—636(L)
Hatcher, Robert D. (see Arase, Elizabeth M.)—1703
—— (see Neuberger, Jacob)—265
Hause, C. D. (see Mann, Glen A.)—1117
Heath, D. F. (see Dieke, G. H.)—432
Helfand, Eugene. On inversion of the linear laws of irreversible thermodynamics—319
——, **H. Reiss, H. L. Frisch, and J. L. Lebowitz.** Scaled particle theory of fluids—1379
Herron, John T. Rate of reaction of nitrogen atoms with ethylene—1273(L)
—— **and Vernon H. Dibeler.** Mass spectrum and appearance potentials of tetrafluorohydrazine—1595(L)
Herschbach, Dudley R. Analysis of reactive scattering in crossed molecular beams—1870(L)
Hertzberg, Martin (see Ortenburger, Irene B.)—579
Hexter, R. M. Intermolecular coupling of vibrations in molecular crystals: a vibrational exciton approach—1833
Higashimura, T. (see Takeda, M.)—631(L)
Higdon, William T. (see Hight, Robert, Jr.)—1656
Hight, Robert, Jr., William T. Higdon, and Paul W. Schmidt. Small angle x-ray scattering study of sodium montmorillonite clay suspensions—1656
Hijikata, Katsunori (see Lin, Chun C.)—878
Hildebrand, Joel H. (see Walkley, John)—621(L)
Hirschfelder, Joseph O. Classical and quantum mechanical hypervirial theorems—1462
——(see Stogryn, Daniel E.)—942(L)
Hirth, J. P. (see Ives, M. B.)—517
Hisatsune, I. C., J. P. Devlin, and Yasuo Wada. Infrared spectra of some unstable isomers of N_2O_4 and N_2O_3—714
Hoare, M. R. (see Harrington, R. E.)—744
Hobey, W. D. and A. D. McLachlan. Dynamical Jahn-Teller effect in hydrocarbon radicals—1694
Hochstrasser, Robin M. Electronic absorption spectrum of diphenylene in substitutional solid-solid solution—950(L)
—— Polarization of the first two electronic transitions of pyrene—459
Hoffman, Morton Z. and Richard B. Bernstein. Relative quenching cross sections in the reaction of $Hg(6^3P_1)$ atoms with isotopic N_2O molecules—526
Hoffman, Ragnar A. Analysis of high-resolution NMR spectra by iterative methods—1256(L)
Hollinger, Henry B. and C. F. Curtiss. Kinetic theory of dense gases—1386
Holmberg, Robert W., Ralph Livingston, and William T. Smith, Jr. Paramagnetic-resonance study of hyperfine interactions in single crystals containing α,α-diphenyl-β-picrylhydrazyl—541
Holøien, E. On excited bound states of negative atomic ions—310(L)
—— Remarks on doubly excited states of the negative atomic hydrogen ion—301(L)
—— Some remarks on the electron affinity of atomic lithium—309(L)
Honig, J. M. (see Bumble, S.)—424
Hooper, H. O. and P. J. Bray. Induction studies in several groups of halogen-containing organic compounds by their Cl^{35}, Br^{79}, or Br^{81} pure quadrupole resonance spectra—334

Hornig, D. F. (see Hansen, K.)—913
Hoyland, J. R. and Lionel Goodman. A modification of Koopmans' theorem for conjugated hydrocarbons—946(L)
Hrostowski, H. J. and B. J. Alder. Evidence for internal rotation in the fine structure of the infrared absorption of oxygen in silicon—980
Hudda, F. G. (see Ehrlich, Gert)—1253(L)
Hugus, Z Z., Jr. (see Britton, Doyle)—1830
Hummer, David G. (see Stebbings, R. F.)—1226
Hurley, A. C. Improved molecular orbitals and the valence bond theory—301(L); erratum—1872(L)
Hurst, C. A. and H. S. Green. New solution of the Ising problem for a rectangular lattice—1059
Hurzeler, H. (see Morrison, J. D.)—821

Ibers, James A. Comments on Carpenter's Paper "Density of the bonding electrons in diamond"—299(L)
——, **Junji Kumamoto, and Robert G. Snyder.** Structure of potassium hydroxide: an x-ray and infrared study—1164
—— (see Snyder, Robert G.)—1171
—— (see Stevenson, D. P.)—762
Iczkowski, Raymond P., John L. Margrave, and John W. Green. Absorption spectrum of chlorine in the vacuum ultraviolet—1261(L)
Ikeda, R. M. Flash-absorption spectroscopy of free radicals in shock waves—311(L)
Imamura, Y. (see Takeda, M.)—631(L)
Inghram, Mark G. (see Grimley, R. T.)—308(L)
—— (see Morrison, J. D.)—821
Ino, Tadashi (see Bauer, S. H.)—685
Inokuti, Mitio. Molecular size distribution and gelation of irradiated copolymers—1607
Ives, M. B. and J. P. Hirth. Dissolution kinetics at dislocation etch pits in single crystals of lithium fluoride—517

Jennings, L. D., R. E. Miller, and F. H. Spedding. Lattice heat capacity of the rare earths. Heat capacities of yttrium and lutetium from 15–350°K—1849
Johnson, Frederic A. (see Colburn, Charles B.)—1869(L)
Johnson, Lauren G. Microwave spectrum of quinuclidine—949(L)
Johnston, D. R., G. J. Oudemans, and R. H. Cole. Dielectric constants of imperfect gases. I. Helium, argon, nitrogen, and methane—1310
Johnston, Harold S. (see Rapp, Donald)—695
Jones, Llewellyn H. Equilibrium constant for isotope exchange in ammonia from infrared spectra—1585(L)
Jones, Peter F (see Bearman, Richard J.)—1432
Joshi, S. K. Number of 3*d* electrons in iron—1261(L)
Joy, Hubert W. and W. F. Libby. Size effects among isotopic molecules—1276(L)

Kaneko, M. (see Krigbaum, W. R.)—921
Karabatsos, Photios J. (see Grunwald, Ernest)—556
Karo, Arnold M. Lattice vibrations in alkali halide crystals. II. Potassium and rubidium halides; cesium fluoride—7
Karplus, Martin. "Average energy approximation" in spin-coupling calculations—941(L)
—— Note on the internal-rotation barrier in ethanic compounds—316(L)
—— Proton spin coupling by pi electrons—1842
Kates, D. F. (see Glick, R. E.)—308(L)
Keffer, Frederic. The effective ionic charge in CdS—1267(L)
Kegeles, Gerson (see Kirkwood, John G.)—1505
Keller, Joseph M. Conduction electrons in sodium tungsten bronze—232
Kemeny, G. and C. H. Haake. Activator center in magnesium fluorogermanate phosphors—783
Kemp, J. C. Electron spin resonance in neutron-irradiated calcite—1269(L)
Kempter, Charles P., Reed O. Elliott, and Karl A. Gschneidner, Jr. Thermal expansion of delta and epsilon zirconium hydrides—837
—— **and M. R. Nadler.** Preparation and crystal structures of RuC and OsC—1580(L)
——, **E. K. Storms, and R. J. Fries.** Lattice dimensions of NbC as a function of stoichiometry—1873(L)
—— (see McGuire, Joseph C.)—1584(L)
Kikuchi, Chihiro and L. M. Matarrese. Paramagnetic-resonance absorption of ions with spin 5/2: Mn^{++} in calcite—601
King, G. J. (see Carlson, F. F.)—1266(L)
King, J. M. (see Boggs, J. E.)—1852
Kingery, W. D. (see Oishi, Y.)—480, 905
Kirkwood, John G., Robert L. Baldwin, Peter J. Dunlop, Louis J. Gosting, and Gerson Kegeles. Flow equations and frames of reference for isothermal diffusion in liquids—1505
—— **and Donald D. Fitts.** Statistical mechanics of transport processes. XIV. Linear relations in multicomponent systems—1317
—— (see Stillinger, Frank H., Jr.)—1282
—— (see Wojtowicz, Peter J.)—1299
Kiser, Robert W. Estimation of the ionization potential and dissociation energy of molecular astatine—1265(L)
Kivelson, Daniel. Theory of ESR linewidths of free radicals—1094
Klaboe, Peter and J. Rud Nielsen. Erratum: Infrared and Raman spectra of fluorinated ethanes. XII. 1,1,2,2,-tetrafluoroethane—617(L)
—— **and J. Rud Nielsen.** Infrared and Raman spectra of fluorinated ethanes. XIII. 1,2-difluoroethane—1765
Klein, H. Michael (see Milne, Thomas A.)—1628
Klemperer, William, W. G. Norris, Alfred Büchler, and Alfred G. Emslie. Infrared spectra of lithium halide monomers—1534
—— (see Wharton, Lennard)—1255(L)
Kneubühl, Fritz Kurt. Line shapes of electron paramagnetic resonance signals produced by powders, glasses, and viscous liquids—1074
Kohin, Barbara C. Molecular rotation in crystals of N_2 and CO—882
Kohn, Harold W. Paramagnetic studies of radiation damage in silica gel—1588(L)
Korvezee, A. E. and J. L. Meyering. Erratum: Validity and consequences of Schreinemakers' theorem on ternary distillation lines—304(L)
Kowalewski, Valdemar J. and Dora G. deKowalewski. Nuclear magnetic resonance spectra of the ABX_3 type: field dependence and relative signs of spin-spin coupling constants—1793
Kraemer, L. M. Cuprous halide films on alkali halide crystals—991
Krauss, M. and B. J. Ransil. Some intra-atomic correlation correction studies—840
Kretschmer, C. B. and H. L. Petersen. Recombination kinetics of atomic oxygen at room temperature—948(L)
Krigbaum, W. R., D. K. Carpenter, M. Kaneko, and A. Roig. Theory of dilute high polymer solutions. II—921
Krisher, Lawrence C. Errata: Microwave spectrum of acetyl cyanide—304(L)
—— Microwave spectrum, barrier to internal rotation, and quadrupole coupling of acetyl bromide—1237
Krishna, V. G. and Lionel Goodman. Solvent effects on $n \rightarrow \pi^*$ transitions in pyrazine—381
Kromhout, Robert A. (see Emerson, Merle T.)—547
—— (see Grunwald, Ernest)—556
Kuchitsu, Kozo (see Bartell, L. S.)—1254(L)
Kuebler, N. A. (see Nelson, L. S.)—610(L)
Kuhn, Stephen J. (see Cook, Denys)—1669
Kumamoto, Junji (see Ibers, James A.)—1164
—— (see Snyder, Robert G.)—1171

Kuppermann, Aron and John G. Larson. Nonmolecular nature of nitric-oxide-inhibited thermal decomposition of *n*-butane—1264(L)
Kurata, Michio, Walter H. Stockmayer, and Antonio Roig. Excluded volume effect of linear polymer molecules—151
Kuri, Zenichiro, Yuzuru Fujiwara, Hisashi Ueda, and Shoji Shida. Behavior of the free radicals trapped in gamma-irradiated compounds which contain hydrogen bonds—1884(L)
Kurita, Yukio (see Miyagawa, Ichiro)—1599
Kuroda, Haruo. Absorption spectra of photo-oxide of meso-naphthodianthrene—1586(L)
—— **and E. A. Flood.** Effect of oxygen on semiconductivities of mesonaphthodianthrene and mesonaphthodianthrone—952(L)

Labes, Mortimer M., Robert Sehr, and Monisha Bose. Organic semiconductors. II. The electrical resistivity of organic molecular complexes—868
LaBudde, C. D. and R. C. Sahni. Study of molecular integrals. II. Three-center one-electron and two-electron integrals—1022
—— (see Sahni, R. C.)—1015
Lafferty, W. J. (see Danti, Alfred)—294(L)
Landesman, H. (see Shapiro, I.)—1590(L)
Larson, John G. (see Kuppermann, Aron)—1264(L)
Lassettre, Edwin N. (see Peek, James M.)—1803
Laurie, Victor W. (see LeBlanc, Oliver H., Jr.)—598
—— (see Norris, James A.)—1256(L)
Lauterbur, Paul C. (see Ettinger, Raymond)—1597(L)
LaVilla, Robert E. and S. H. Bauer. Molecular structure of iodine heptafluoride—182
Lawton, Elliott J., J. S. Balwit, and R. S. Powell. Paramagnetic-resonance studies of irradiated high-density polyethylene. I. Radical species and the effect of environment on their behavior—395
——, **J. S. Balwit, and R. S. Powell.** Paramagnetic-resonance studies of irradiated high-density polyethylene. II. Effect of irradiation dose on the radical species trapped at room temperature—405
Leadbetter, A. J. (see Flubacher, P.)—1750
LeBlanc, Oliver H., Jr. Hole and electron drift mobilities in anthracene—626(L)
——, **Victor W. Laurie, and William D. Gwinn.** Microwave spectrum, structure, and dipole moment of formyl fluoride—598
Lebowitz, J. L. (see Helfand, E.)—1379
Lefebvre, Roland. Electron spin resonance line shape of a polycrystalline CH radical—1826
—— (see McLachlan, A. D.)—65
Lefebvre-Brion, H. C. M. Moser, and R. K. Nesbet. The $^1\Sigma^+$ excited states of carbon monoxide—931(L)
Legvold, Sam (see Amme, Robert C.)—91
—— (see Valley, L. M.)—627(L)
Lehmann, Walter J., Charles O. Wilson, Jr., and I. Shapiro. Infrared spectra of alkyldiboranes. III. 1,2-dimethyl- and 1,2-diethyldiboranes—590
Levy, Paul W. (see Shuskus, A. J.)—622(L)
Libby, W. F. Optical transparency and resistance to flash heating—1588(L)
—— (see Joy, Hubert W.)—1276(L)
Lide, David R., Jr. Dipole moments of hydrocarbons—1879(L)
—— Microwave spectrum, structure, and dipole moment of propane—1514
—— Structure of the isobutane molecule; change of dipole moment on isotopic substitution—1519
Lifson, Shneior and Irwin Oppenheim. Neighbor interactions and internal rotations in polymer molecules. IV. Solvent effect on internal rotations—109
Lin, Chun C., Katsunori Hijikata, and Michiko Sakamoto. Electronic structure and hyperfine structure constants of NO molecule—878
Lind, S. C. (see Rudolph, P. S.)—705
Linder, Bruno. Continuum-model treatment of long-range intermolecular forces. I. Pure substances—668
Linschitz, H. (see Blauer, G.)—937(L)
Lippincott, Ellis R. (see Steele, D.)—1242
—— (see Vanderslice, Joseph T.)—614(L)
Lipscomb, William N. and Doyle Britton. Valence structure of the higher borides—275
Livingston, Ralph and A. J. Weinberger. Atomic and molecular hydrogen yields from irradiated acids—499
—— (see Holmberg, Robert W.)—541
Long, Maurice W., Quitman Williams, and T. L. Weatherly. Microwave spectrum of $CFCl_3$—508
Longuet-Higgins, H. C. (see Golden, S.)—1479
Lord, R. C. (see Aronson, J. R.)—1004
—— (see Danti, Alfred)—294(L)
Lounasmaa, O. V. Application of Ehrenfest equations to liquid-vapor and liquid-solid mixtures of He^4—443
Low, W. Absorption lines of Cr^{3+} in ruby—1162
—— (see Friedman, E.)—1275(L)
Lund, L. H. X-ray scattering by a cell-model liquid—1086

MacCallum, C. J. Comment on dynamical theory of electrosedimentation—1263(L)
Machacek, Milos and Charles W. Scherr. Simple configuration interaction wave functions. III. Three-electron atomic system: an analytic study—242
Mackenzie, J. D. and W. K. Murphy. Structure of glass-forming halides. II. Liquid zinc chloride—366
Mahan, Bruce H. Photolysis of carbon dioxide—959
Mahendroo, P. P. (see Nolle, A. W.)—863
Mahler, W. and E. L. Muetterties. F^{19} spectra of phosphorus (V) fluorides—636(L)
Maisch, William G. (see Vanderslice, Joseph T.)—614(L)
Majumdar, Dilip Kuman and Sadhan Basu. Charge transfer and fluorescence quenching—1199
Maki, August H. and David H. Geske. Electron-spin resonance of electrochemically generated free radicals. Isomeric dinitrobenzene mononegative ions—825
Mandel, G., R. P. Bauman, and E. Banks. Electronic transitions of rare earth ions in the infrared region—192
Mangelsdorf, Paul C., Jr. Transport processes in liquid alloys. II. The electrical force on an ion—1151
Mann, D. E. and B. A. Thrush. On the absorption spectrum of CF_3 and its vibrational analysis—1731
Mann, Glen A. and C. D. Hause. Magnetic rotation spectra of nitric oxide in the near infrared—1117
Mann, Joseph B. (see Blais, Normand C.)—100
Mannella, Gene G., Robert R. Reeves, and Paul Harteck. Surface catalyzed excitation with N and O atoms—636(L)
Manning, Francis S. and William P. Manning. Derivation of thermodynamic relations for three-dimensional systems—1554
Manning, William P. (see Manning, Francis S.)—1554
Margolis, Jack S. (see Satten, Robert A.)—618(L)
Margrave, John L. (see Green, John W.)—35
—— (see Iczkowski, Raymond P.)—1261(L)
Mason, Edward A. (see Fallon, Robert J.)—944(L)
—— (see Vanderslice, Joseph T.)—492, 614(L)
Matarrese, L. M. (see Kikuchi, Chihiro)—601
Matheson, M. S. (see McMillan, J. A.)—609(L)
Mayer, Joseph E. Ensembles of maximum entropy—1484
Mayo, D. W. (see Harrah, L. A.)—298(L)
Mazo, Robert (see Dupuis, Marc)—1452

McCall, David W. and Dean C. Douglass. Nuclear magnetic resonance in solid adamantane—777
McConnell, Harden M. Biradical paradox—1868(L)
—— Theory of singlet-triplet splittings in large biradicals—115
—— (see Dearman, H. H.)—1877(L)
—— (see Sternlicht, H.)—302(L)
McGrath, J. W. and A. A. Silvidi. Proton-magnetic-resonance study of barium bromide monohydrate—644
—— (see Silvidi, A. A.)—1788
McGrath, W. D. Production of vibrationally excited S_2 in the isothermal flash photolysis of S_2Cl_2—279(L)
McGuire, Joseph C. and Charles P. Kempter. Preparation and properties of scandium dihydride—1584(L)
McInteer, B. B. and M. J. Reisfeld. Thermal-diffusion-column shape factors for the Lennard-Jones (12-6) potential—570
McLachlan, A. D. Valence-bond resonance structures for a triplet state—663
——, **H. H. Dearman, and R. Lefebvre.** Theory of hyperfine interactions in aromatic radicals—65
—— (see Hobey, W. D.)—1694
McLaren, G. A. (see Parker, D. J.)—629(L)
McMahon, Paul E. (see Schug, John C.)—843
McMillan, J. A., M. S. Matheson, and B. Smaller. Paramagnetic resonance of gamma-irradiated single crystals of ice at 77°K—609(L)
McNesby, James R. (see Gordon, Alvin S.)—1882(L)
McRae, E. G. A vibrational effect on the polarization of molecular crystal fluorescence—932(L)
Melton, C. E. Charge transfer reactions producing intrinsic chemical change: methyl, methylene, and hydrogen radicals produced from argon and methane reactions—647
—— **and P. S. Rudolph.** Transient species in the radiolytic polymerization of cyanogen—1594(L)
Meschi, David J., William A. Chupka, and Joseph Berkowitz. Heterogeneous reactions studied by mass spectrometry. I. Reaction of B_2O_3(s) with H_2O(g)—530
—— (see Berkowitz, Joseph)—533
Meyer, Norman J. Multiple vibrational relaxation in gaseous dibromomethane—487
Meyering, J. L. (see Korvezee, A. E.)—304(L)
Miller, Brian S. Identification of colloidal sodium in sodium azide—889
—— (see Carlson, F. F.)—1266(L)
Miller, R. E. (see Jennings, L. D.)—1849
Milne, Thomas A. and H. Michael Klein. Mass spectrometric study of heats of dimerization of alkali chlorides—1628
Minomura, S. and H. G. Drickamer. Effect of pressure on the *M* center in alkali halide crystals—290
Mitchell, Richard W. and Melvin Eisner. Nuclear spin-lattice relaxation in solutions—86
Mitoff, S. P. Comments on Dr. Schmalzried's Letter—941(L)
Miyagawa, Ichiro, Yukio Kurita, and Walter Gordy. Electron spin resonance of an irradiated single crystal of N-acetylglycine—1599
Moffitt, William (see Witkowski, Andrzej)—872
Molinari, E. (see Cimino, A.)—616(L)
Monostori, B. and A. Weber. Raman spectrum of gaseous CF_4—1867(L)
Monse, E. U. Calculation of equilibrium constants for several isotope exchange reactions involving N_2O_4—312(L)
Monson, Philip R. (see Robben, Frank)—630(L)
Moore, Neal. Energy of interaction of two helium atoms—471
Moore, W. and M. Silver. Generation of free carriers in photoconducting anthracene. I—1671
Morgan, J. E., L. Elias, and H. I. Schiff. Recombination of oxygen atoms in the absence of O_3—930(L)
Morrison, J. A. (see Flubacher, P.)—1750
Morrison, J. D., H. Hurzeler, Mark G. Inghram, and H. E. Stanton. Threshold law for the probability of excitation of molecules by photon impact. A study of the photoionization efficiencies of Br_2, I_2, HI, and CH_3I—821
Moser, C. M. (see Brion, *H.*)—1871(L)
—— (see Lefebvre-Brion, H.)—931(L)
Moser, J. B. (see Whitmore, D. H.)—917
Muetterties, E. L. (see Mahler, W.)—636(L)
Muha, George M. and Philip A. Vaughan. Structure of the complex ion in aqueous solutions of zirconyl and hafnyl oxyhalides—194
Mulliken, Robert S. Lowest triplet states of ethylene—1596(L)
—— Some neglected subcases of predissociation in diatomic molecules—247
—— (see Phillipson, P.)—615(L)
Murphy, W. K. (see Mackenzie, J. D.)—366
Murthy, C. R. K. and R. D. Spence. Nuclear magnetic relaxation in a strongly associated liquid—945(L)
Muschlitz, E. E., Jr. (see Smith, G. M.)—1819
Myers, Rollie J. and E. Bright Wilson, Jr. Application of symmetry principles to the rotation-internal torsion levels of molecules with two equivalent methyl groups—186

Nadler, M. R. (see Kempter, Charles P.)—1580(L)
Nakagawa, Ichiro (see Thorson, Walter R.)—994
Narasimhan, P. T. and Max T. Rogers. Nuclear magnetic resonance spectra of systems of the A_2B_2C type: proton magnetic resonance spectra and the absolute signs of the proton-proton spin coupling constants in ethyl acetylene and ethyl mercaptan—727
Negita, Hisao and P. J. Bray. N^{14} pure quadrupole resonances of several nitriles—1876(L)
Nelson, L. S. and N. A. Kuebler. Kinetic absorption spectra recorded through flash-heated grids—610(L)
Nelson, R. R., W. Webb, and J. A. Dixon. First-order phase transitions of six normal paraffins at elevated pressures—1755
Nesbet, R. K. (see Lefebvre-Brion, H.)—931(L)
Nettleton, R. E. Casimir coefficients and minimum entropy production—237
Neuberger, Jacob and Robert D. Hatcher. Frequency spectrum for a two-dimensional lattice—265
Nielsen, J. Rud (see Klaboe, Peter)—617(L), 1765
Nolle, A. W. and P. P. Mahendroo. Effects of pressure on proton spin-lattice relaxation in several degassed organic liquids—863
Norris, James A. and Victor W. Laurie. Erratum: Energy levels of a slightly asymmetric top—1256(L)
Norris, W. G. (see Klemperer, William)—1534

Ogg, Richard A., Jr. (see Ortenburger, Irene B.)—579
Oishi, Y. and W. D. Kingery. Oxygen diffusion in periclase crystals—905
—— **and W. D. Kingery.** Self-diffusion of oxygen in single crystal and polycrystalline aluminum oxide—480
Okamura, S. (see Takeda, M.)—631(L)
Olah, George A. (see Cook, Denys)—1669
Onsager, Lars (see Dupuis, Marc)—1452
Oppenheim, Irwin (see Lifson, Shneior)—109
Ore, Aadne. Quantum yield for energy transfer by resonance—31
Ortenburger, Irene B., Martin Hertzberg, and Richard A. Ogg, Jr. Secondary reactions in a gas discharge—579
—— (see Rapp, Donald)—1230
Osborne, Darrell W. (see Burns, John H.)—387
O'Toole, J. T. and J. S. Dahler. Boltzmann equation and inverse collisions—1487
—— **and J. S. Dahler.** Molecular friction in dilute gases—1496
Otterson, Dumas A. On the presence of NaOH in crystalline NaCl—227

Oudemans, G. J. (see Johnston, D. R.)—1310
Overend, John and James R. Scherer. Transferability of Urey-Bradley force constants. IV. Methyl halides—446
—— (see Scherer, James R.)—314(L), 1680

Padmini, P. R. K. L., K. Subba Rao, and B. Ramachandra Rao. Molar sound velocity in inorganic acids—1268(L)
Pake, G. E. (see Anderson, M. E.)—1581(L)
—— (see Rogers, R. N.)—1107
Palko, A. A. and J. S. Drury. Separation of boron isotopes. IV. The methyl sulfide-BF_3 system—779
Pappalardo, R. Note on the optical absorption of $MnCl_2$ and $MnBr_2$—613(L)
—— **and D. L. Wood.** Spectrum of Yb^{3+} in yttrium gallium garnet—1733
Parker, D. J., G. A. McLaren, and J. J. Conradi. Observation of the Overhauser effect on carbon-13 nuclear resonance signals—629(L)
Parr, Robert G. Three remarks on molecular orbital theory of complex molecules—1184
—— (see Saturno, Antony F.)—22
Parsons, J. L. Vibrational spectra of orthorhombic metaboric acid—1858
Patterson, Andrew, Jr. (see Ettinger, Raymond)—1597(L)
Peek, James M. and Edwin N. Lassettre. Molecular orbital treatment of hydrogen with central potentials and modified boundary conditions—1803
Pennington, K. S. and H. E. Petch. Nuclear magnetic resonance spectrum of B^{11} in inderite—329
Perls, Thomas A. and L. Bruce Wilner. Effects of pressure on dielectric relaxation in a chlorinated diphenyl—753
Person, Willis B. and Charles A. Swenson. Infrared studies of crystal benzene. IV. Absolute intensities—233
—— (see Swenson, Charles A.)—56
Petch, H. E. (see Pennington, K. S.)—329
Peterlin, Anton. Gradient dependence of intrinsic viscosity of freely flexible linear macromolecules—1799
Petersen, D. H. (see Pierce, Louis)—907
Petersen, H. L. (see Kretschmer, C. B.)—948(L)
Phillips, W. D. and R. E. Benson. Ligand spin densities and magnetic properties of some aminotroponeimine chelates of nickel—607(L)
——, **J. C. Rowell, and S. I. Weissman.** EPR studies of the tetracyanoethylene anion radical—626(L)
Phillipson, P. and R. S. Mulliken. Note on Hurley's "Improved molecular orbitals and the valence bond theory"—615(L)
Pierce, Louis and D. H. Petersen. Microwave spectrum, structure, dipole moment, and internal rotation of trimethyl silane—907
Pimentel, George C. (see Baldeschwieler, John D.)—1008
—— (see Goldfarb, Theodore D.)—105
Piotrowski, Edward A. (see Gilbert, Robert L.)—1872(L)
Piper, T. S. and R. L. Carlin. Axial crystal fields in the ionic model—1208
—— **and R. L. Carlin.** Polarized visible spectra of crystalline trisoxalatometallates: the source of intensity—608(L)
Plane, Robert A. (see Chantry, George W.)—634(L), 736
Plesner, Igor W. Diffusion in a linear lattice—652
Poland, Duncan E. (see Green, John W.)—35
Porter, Gerald B. and B. T. Connelly. Kinetics of excited molecules. II. Dissociation processes—81
Porter, Richard F. Mass spectra of vapors in the Al-AlF_3 and Al-LiF-AlF_3 systems—951(L)
—— **and Ernest E. Zeller.** Mass spectra of aluminum (III) halides and the heats of dissociation of Al_2F_6(g) and $LiF \cdot AlF_3$(g)—858
—— (see Bauer, S. H.)—685
Poulet, Henri (see Zmerli, Adnan)—1177
Powell, R. S. (see Lawton, Elliott J.)—395, 405
Prager, Stephen. Diffusion in inhomogeneous media—122
Purlee, E. Lee (see Grunwald, Ernest)—556

Rabinovitch, B. S. (see Harrington, R. E.)—744, 1271(L)
Rabinowitz, Philip and George Weiss. Tables for the calculation of lattice sums—1272(L)
Radford, H. E. and F. O. Rice. Green and purple sulfur: electron-spin resonance studies—774
Randić, Milan. Out-of-plane CH vibrations in some polynuclear aromatic hydrocarbons—710
Rank, D. H., D. P. Eastman, W. B. Birtley, and T. A. Wiggins. Perturbation of molecular rotation-vibration energy levels by rare gases—323
——, **D. P. Eastman, W. B. Birtley, and T. A. Wiggins.** Shapes and breadths of some molecular rotation-vibration band lines perturbed by rare gases—327
Ransil, B. J. (see Krauss, M.)—840
Rao, B. Ramachandra (see Padmini, P. R. K. L.)—1268(L)
Rao, K. Subba (see Padmini, P. R. K. L.)—1268(L)
Rao, V. S. and Richard C. Schoonmaker. Velocity analysis of molecular beams generated from NaOH vapors—1717
Rapp, Donald and Harold S. Johnston. Nitric oxide-fluorine dilute diffusion flame—695
—— **and Irene B. Ortenburger.** Interchange of charge between gaseous molecules—1230
Rastogi, R. P. and R. C. Srivastava. Entropy production in chemical reactions—79
Rea, D. G. The effect of hydrogen bonding on the intensity of the CD Raman band of $CDCl_3$—1875(L)
Reeves, Robert R. (see Mannella, Gene G.)—636(L)
Reilly, C. A. and J. D. Swalen. Erratum: NMR spectra of some simple epoxides—617(L)
—— **and J. D. Swalen.** On the analysis of high-resolution NMR spectra by iterative methods—1257(L)
Reisfeld, M. J. (see McInteer, B. B.)—570
Reiss, H. (see Helfand, E.)—1379
Reitz, D. C., F. Dravnieks, and J. E. Wertz. Carbon-13 hyperfine splittings in semiquinones—1880(L)
—— **and S. I. Weissman.** Spin exchange in biradicals—700
Rice, F. O. (see Radford, H. E.)—774
Rice, Stuart A. Some further remarks on the coefficient of self-diffusion in simple dense fluids—1376
—— (see Allnatt, Alan R.)—573
—— (see Harris, Robert A.)—1047, 1055
Richardson, J. M. and S. R. Brinkley, Jr. Cell method in grand canonical ensemble—1467
Robben, Frank, Philip R. Monson, and John J. Allport. Correlation of experimental results for the vibrational relaxation of nitric oxide—630(L)
Robertson, W. W. Comparison of the effects of high pressure and low temperature on the absorption spectra of some condensed-ring aromatics—362
Robinson, D. W. (see Aronson, J. R.)—1004
Robinson, G. W. (see Wright, M. R.)—934(L)
Robinson, J. M. Concise method for forming two-center integrals of operators—734
Rogers, Max T. (see Narasimhan, P. T.)—727
Rogers, R. N. and G. E. Pake. Paramagnetic relaxation in solutions of VO^{++}—1107
Rogge, William H., Frederick L. Yarger, and Fred P. Dickey. Emission spectrum of the OH radical in an oxyacetylene flame in the 1.5-μ region—453
Roig, Antonio (see Krigbaum, W. R.)—921
—— (see Kurata, Michio)—151
Rosenberg, Arthur J. Activity coefficients of electrons and holes at high concentrations—665
Ross, John (see Choi, Sang-Il)—1324
Ross, Marvin (see Steele, William A.)—464
Rothe, Erhard W. (see Schumacher, Hugo)—584
Rowell, J. C. (see Phillips, W. D.)—626(L)

Rubin, Robert J. and Kurt E. Shuler. On the dissociation of polyatomic molecules—438
Rudd, De F. P. and B. Widom. Critical solution phenomenon in two-component liquid systems. The system water-ethylene glycol mono-isobutyl ether—1815
Rudolph, P. S. and S. C. Lind. Kinetics of the alpha radiolysis of carbon monoxide—705
—— (see Melton, C. E.)—1594(L)
Rupprecht, A. (see Forsén, S.)—1888(L)

Sahni, R. C. and C. D. LaBudde. Study of molecular integrals. I. Two-center exchange integrals—1015
—— (see LaBudde, C. D.)—1022
Sakamoto, Michiko (see Lin, Chun C.)—878
Salkoff, Morris (see Bauer, Ernest)—1202
Salomon, R. E. (see Graven, W. M.)—954(L)
Sanborn, Russell H. Infrared spectra and structure of the isomers of N_2F_2—1855
—— (see Gunn, Stuart R.)—955(L)
Sato, S. (see Arai, S.)—1277(L)
Satten, Robert A. and Jack. S. Margolis. Erratum: f^2 configuration in crystalline field—618(L)
——, **Donald Young, and Dieter M. Gruen.** Preliminary analysis of U^{4+} ion spectra in crystals—1140
Saturno, Antony F. and Robert G. Parr. A one-center wave function for the methane molecule—22
Scatchard, George. John Gamble Kirkwood, 1907–1959—1279
——, **B. Vonnegut, and D. W. Beaumont.** New type of freezing-point apparatus, freezing points of dilute lanthanum chloride solutions—1292
Scherer, James R., J. C. Evans, and John Overend. Infrared and Raman spectra of C_2Br_2D—314(L)
—— **and John Overend.** Transferability of Urey-Bradley force constants. V. Bromoethylenes—1680
—— (see Overend, John)—446
Scherr, Charles W. Second-order perturbation energy of the two-electron atom—317(L)
—— (see Machacek, Milos)—242
Schiff, H. I. (see Morgan, J. E.)—930(L)
Schmalzried, Hermann. Electrical conduction in magnesium oxide—940(L)
Schmidt, Paul W. (see Hight, Robert, Jr.)—1656
Schnepp, O. and K. Dressler. Absorption spectra of solid xenon, krypton, and argon in the vacuum ultraviolet—49
—— (see Dressler, K.)—270
Schoonmaker, Richard C. (see Rao, V. S.)—1717
Schug, John C., Paul E. McMahon, and H. S. Gutowsky. Electron coupling of nuclear spins. IV. Temperature dependence in substituted ethanes—843
Schuler, Robert H. (see Fessenden, Richard W.)—935(L)
Schulz, G. J. Excitation and negative ions in H_2O—1661
Schumacher, H. J. Mechanism of ozone decomposition—938(L)
Schumacher, Hugo, Richard B. Bernstein, and Erhard W. Rothe. Total collision cross sections for the interaction of molecular beams of cesium chloride with gases. Influence of the dipole-dipole force upon the scattering—584
Schurin, Bertram. Calculated band intensities for CO_2 from infrared dispersion data—1878(L)
Seager, Spencer L. (see Giddings, J. Calvin)—1579(L)
Sears, Gerald W. Growth poisoning of lithium fluoride from aqueous solutions—1068
—— Nucleation and growth of mercury crystals at low supersaturation—563
—— **and J. W. Cahn.** Interaction of condensable gases with cold surfaces—494
Sederholm, C. H. (see Crapo, L. M.)—1583(L)
Sehr, Robert (see Labes, Mortimer M.)—868
Shapiro, I. and H. Landesman. Fragmentation patterns of halogenated pentaboranes—1590(L)
—— (see Lehmann, Walter J.)—590
Shida, S. (see Arai, S.)—1277(L)
Shida, Shoji (see Kuri, Zenichiro)—1884(L)
Shuler, Kurt E. and Robert Zwanzig. Quantum-mechanical calculation of harmonic oscillator transition probabilities in a one-dimensional impulsive collision—1777
—— (see Rubin, Robert J.)—438
Shuskus, A. J., C. G. Young, O. R. Gilliam, and Paul W. Levy. Electron spin resonances in irradiated potassium azide—622(L)
Silver, M. (see Moore, W.)—1671
Silvidi, A. A. and J. W. McGrath. Proton magnetic resonance study of barium bromate monohydrate—1788
—— (see McGrath, J. W.)—644
Simha, Robert and J. L. Zakin. Compression of flexible chain molecules in solution—1790
Sinanoğlu, Oktay. Inter- and intra-atomic correlation energies and theory of core-polarization—1212
Sinclair, T. F. (see Stern, S. Alexander)—805
Singer, Sister Judith Mary and Gilbert W. Castellan. Excess free energy in dehydrogenated palladium—633(L)
Sloan, G. J. (see Chesnut, D. B.)—637(L)
Smaller, B. (see McMillan, J. A.)—609(L)
Smith, A. C. H. (see Fox, J. W.)—623(L)
Smith, G. M. and E. E. Muschlitz, Jr. Scattering of metastable helium atoms in helium, neon, and argon—1819
Smith, Richard P. Mean square length of a hindered alkane chain—876
Smith, William T., Jr. (see Holmberg, Robert W.)—541
Snyder, Lawrence C. Helium atom wave functions from Slater orbitals of nonintegral principal quantum number—1710
—— Jahn-Teller distortions in cyclobutadiene, cyclopentadienyl radical, and benzene positive and negative ions—619(L)
Snyder, Robert G., Junji Kumamoto, and James A. Ibers. Vibrational spectrum of crystalline potassium hydroxide—1171
—— (see Ibers, James A.)—1164
Soden, R. R. (see Van Uitert, L. G.)—567, 1532
Somayajulu, G. R. Dissociation energies of diatomic molecules—1541
Sommer, Armin, Patrick N. Walsh, and David White. Mass spectrometric and infrared emission investigation of the vapor species in the B-S system at elevated temperatures—296(L)
Spedding, F. H. (see Jennings, L. D.)—1849
Spence, R. D. (see Murthy, C. R. K.)—945(L)
Spindel, W. and Marvin J. Stern. Erratum: Some observations on atomic exchange in NO—942(L)
Spinner, E. Bond lengths and nuclear quadrupole coupling in vinyl halides—611(L)
Srivastava, R. C. (see Rastogi, R. P.)—79
Stafford, Fred E. (see Ackerman, Marcel)—1783
Stalinski, B., C. K. Coogan, and H. S. Gutowsky. Proton magnetic resonance studies of nonstoichiometric titanium hydride—933(L)
Stanton, H. E. (see Morrison, J. D.)—821
Stebbings, R. F., Wade L. Fite, and David G. Hummer. Charge transfer between atomic hydrogen and N^+ and O^+—1226
Steel, C. and M. Szwarc. Methyl affinities determined by photolysis of azomethane—1677
Steele, D., E. R. Lippincott, and J. Xavier. Vibrational spectra of penta-deutero-fluorobenzene—1242

Steele, William A. Physical properties of isotopically substituted classical fluids—1619
—— **and Marvin Ross.** Distribution functions of a fluid in an external potential field: application to physical adsorption—464
Stern, Marvin J. (see Spindel, W.)—942(L)
Stern, S. Alexander, P. C. Waterman, and T. F. Sinclair. Separation of gas mixtures in a supersonic jet. II. Behavior of helium-argon mixtures and evidence of shock separation—805
Sternlicht, Himan. Polycrystalline resonance line shape of π-electron radicals—1128
—— **and H. M. McConnell.** Effect of deuterium substitution on the lifetime of the phosphorescent triplet state of naphthalene—302(L)
Stevenson, D. P. and James A. Ibers. On the equilibrium C—H distance in methane—762
Stewart, John W. Compression and phase transitions of solid NH_3, SiF_4, H_2S, and CF_4—128
Stillinger, Frank H., Jr., and John G. Kirkwood. Theory of the diffuse double layer—1282
Stockmayer, Walter H. Diffusion of weak electrolytes—1291
—— (see Kurata, Michio)—151
Stogryn, Daniel E. and Joseph O. Hirschfelder. Errata: "Contributions of bound, metastable, and free molecules to the second virial coefficient and some properties of double molecules" and "Initial pressure dependence of thermal conductivity and viscosity"—942(L)
Storms, E. K. (see Kempter, C. P.)—1873(L)
Stout, J. W. Absorption spectra of $MnCl_2$ and $MnBr_2$—303(L)
Strehlow, Roger A. and Arthur Cohen. Erratum: Reflected shock technique for studying fast chemical reactions—618(L)
Sugano, Satoru. Optical rotatory dispersion of transition-metal complexes—1883(L)
Sundaram, S. Force constants for NH_4^+ and ND_4^+—708
Swalen, J. D. (see Reilly, C. A.)—617(L), 1257(L)
Swenson, Charles A. and Willis B. Person. Infrared studies of crystal benzene. II. Relative intensities—56
—— (see Person, Willis B.)—233
Szwarc, M. (see Steel, C.)—1677

Tadokoro, Hiroyuki. Normal vibrations of the polymer molecules of helical configuration—1558
Takeda, M., Y. Imamura, S. Okamura, and T. Higashimura. Dipole moment of isotactic and atactic polyvinyl isobutyl ether—631(L)
Tamor, S. Structure of transport equations—1421
—— (see Auer, P. L.)—1426
Taube, H. (see Baldwin, H. W.)—206
Thorson, Walter R. and Ichiro Nakagawa. Dynamics of the quasi-linear molecule—994
Thrush, B. A. (see Mann, D. E.)—1731
Tinoco, Ignacio, Jr. Optical and other electronic properties of polymers—1332
Tobias, Irwin, Robert J. Fallon, and Joseph T. Vanderslice. Potential energy curves for CO—1638
Tosi, M. P. (see Fumi, F. G.)—1
Truesdell, Clifford (see Coleman, Bernard D.)—28
Turrell, George C., H. Vu, and B. Vodar. Induced Q branch in the vibration-rotation spectrum of HCl pressurized with Ar—315(L)
Tuttle, T. R., Jr. (see Anderson, M. E.)—1581(L), 1591(L)
Tykodi, R. J. Thermodynamics, stationary states, and steady-rate processes. V. A collection of corollaries—40
—— (see Erikson, Ted A.)—46

Ueda, Hisashi (see Kuri, Zenichiro)—1884(L)

Valley, L. M. and Sam Legvold. Sound dispersion in ethane and 1·1-difluoroethane—627(L)
Vanderslice, Joseph T. and Edward A. Mason. Interaction energies for the H-H_2 and H_2-H_2 system—492
——, **Edward A. Mason, William G. Maisch, and Ellis R. Lippincott.** Potential curves for N_2, NO, and O_2—614(L)
—— (see Fallon, Robert J.)—944(L)
—— (see Tobias, Irwin)—1638
van Roggen, A. Satellite lines in paramagnetic resonance spectra—1589(L)
Van Uitert, L. G. and R. R. Soden. Emission spectra of erbium in the Scheelite structure—567
—— **and R. R. Soden.** Emission spectrum of trivalent holmium in the Scheelite structure—1532
Varney, Robert N. Statistical mechanics of molecular ions—1708
Varsanyi, F. and G. H. Dieke. Infrared absorption spectrum of $NdCl_3$—1616
Vaughan, Philip A. (see Muha, George M.)—194
Vodar, B. (see Turrell, George C.)—315(L)
Volk, H. and G. D. Halsey, Jr. Solubility of hydrogen and deuterium in liquid argon—1132
Volpi, G. G. (see Cimino, A.)—616(L)
Vonnegut, B. (see Scatchard, G.)—1292
Vu, H. (see Turrell, George C.)—315(L)

Wada, Yasuo (see Hisatsune, I. C.)—714
Wainwright, T. E. (see Alder, B. J.)—1439
Waite, Thomas R. Antiferromagnetic coupling and covalent bonding in almost totally ionic salts—256
Walkley, John, David N. Glew, and Joel H. Hildebrand. Relations between ultraviolet and visible absorption peaks of iodine solutions—621(L)
Walrafen, George E. Acube-root law for the activity coefficient quotient of the dissociation of HSO_4^- ion—947(L)
Walsh, Patrick N. (see Sommer, Armin)—296(L)
Waterman, P. C. (see Stern, S. Alexander)—805
Wayland, Harold. Streaming birefringence of rigid macromolecules in general two-dimensional laminar flow—769
Weatherly, T. L. (see Long, Maurice W.)—508
Webb, W. (see Nelson, R. R.)—1755
Weber, A. (see Monostori, B.)—1867(L)
Weigang, O. E., Jr. Spectral solvent shift. I. Paraffin hydrocarbon solvent interactions with polynuclear aromatic hydrocarbons—892
Weinberger, A. J. (see Livingston, Ralph)—499
Weinreb, A. (see Basile, L. J.)—1028
Weinstock, Bernard (see Claassen, Howard H.)—436
Weiss, George (see Rabinowitz, Philip)—1272(L)
Weissman, S. I. (see Phillips, W. D.)—626(L)
—— (see Reitz, D. C.)—700
Wertz, J. E. (see Reitz, D. C.)—1880(L)
Westrum, Edgar F., Jr. (see Burns, John H.)—387
Wexler, S. and G. R. Anderson. Dissociation of methyl bromide by nuclear isomeric transition of 4.4-hr Br^{80m}—850
Wharton, Lennard, L. Peter Gold, and William Klemperer. Dipole moment of lithium hydride—1255(L)
White, David (see Sommer, Armin)—296(L)
Whitmore, D. H. and J. B. Moser. Sublimation of small sodium chloride spheres into argon—917
Widom, B. (see Rudd, De F. P.)—1815
Wiggins, T. A. (see Rank, D. H.)—323, 327
Wilcox, Charles F., Jr. Ultraviolet spectrum of triptycene—1874(L)
Wildi, B. S. (see Epstein, A.)—618(L)
Williams, F. A. On the assumptions underlying droplet vaporization and combustion theories—133
Williams, Quitman (see Long, Maurice W.)—508
Wilmshurst, J. K. Orbital radii and the dependence of bond length upon ionicity, hybridization, and bond order—813

Wilner, L. Bruce (see Perls, Thomas A.)—753
Wilson, Charles O., Jr. (see Lehmann, Walter J.)—590
Wilson, E. Bright, Jr. Bond lengths and nuclear quadrupole coupling in vinyl halides—612(L)
—— (see Myers, Rollie J.)—186
Witkowski, Andrzej and William Moffitt. Electronic spectra of dimers: derivation of the fundamental vibronic equation —872
Woermann, D. (see Debye, P.)—1745
Wojtowicz, Peter J. and John G. Kirkwood. Contribution of lattice vibrations to the order-disorder transformation in alloys—1299
Wolfsberg, Max. Isotope effects on reaction rates and the reaction coordinate—21
—— Note on secondary isotope effects in reaction rates—2
—— (see Gutmann, Joel R.)—1592(L)
Wood, D. L. (see Pappalardo, R.)—1733
Wood, J. L. Diffusion theory of chemical reaction—1587(L)
Wright, M. R., R. P. Frosch, and G. W. Robinson. Phosphorescence lifetime of benzene. An intermolecular heavy-atom effect, a deuterium effect, and a temperature effect —934(L)
Wulfman, Carl E. Approximate electronic energy surfaces from cuspless wave functions—1567

Xavier, J. (see Steele, D.)—1242

Yamamoto, Tsunenobu. Quantum statistical mechanical theory of the rate of exchange chemical reactions in the gas phase—281
Yamazaki, M. (see Brion, H.)—1871(L)
Yao, Y. L. Detection of order in Ni_3Co—741
Yarger, Frederick L. (see Rogge, William H.)—453
Yaroslavsky, Samuel and Ernst D. Bergmann. Dipole moment and conformation of 2-chlorocyclohexanone—635(L)
Young, C. G. (see Shuskus, A. J.)—622(L)
Young, Donald (see Satten, Robert A.)—1140
Young, Robert A. Method for investigating the order of chemiluminescent reactions, the diffusion coefficient of the labile reactants, and the catalytic efficiency of surfaces—1044
—— Pressure dependence of some infrared and vacuum ultraviolet bands occurring in active nitrogen—1112

Zahner, J. C. and H. G. Drickamer. Pressure effects in nickel dimethylglyoxime and related chelates—1625
Zakin, J. L. (see Simha, Robert)—1790
Zandstra, P. J. (see Anderson, M. E.)—1591(L)
Zeller, Ernest E. (see Porter, Richard F.)—858
Zimm, Bruno H. Theory of "melting" of the helical form in double chains of the DNA type—1349
Zinn, John (see Chan, Sunney I.)—295(L), 1643
Zlatarich, Steven A. (see Brabbs, Theodore A.)—307(L)
Zmerli, Adnan and Henri Poulet. Polarized absorption and fluorescence spectra of 2,6-dimethylnaphthalene at different temperatures—1177
Zwanzig, Robert. Ensemble method in the theory of irreversibility—1338
—— (see Shuler, Kurt E.)—1777

Analytical Subject Index to Volume 33

(References with (L) are to Letters to the Editor)

Absorption Spectra Infrared

Electronic transitions of rare earth ions in the infrared region, G. Mandel, R. P. Bauman, and E. Banks—192
Equilibrium constant for isotope exchange in ammonia from infrared spectra, Llewellyn H. Jones—1585(L)
Erratum: Infrared and raman spectra of fluorinated ethanes. XII. 1, 1, 2, 2-tetrafluoroethane [J. Chem. Phys. **32**, 899 (1960)], Peter Klaboe and J. Rud Nielsen—617(L)
Evidence for internal rotation in the fine structure of the infrared absorption of oxygen in silicon, H. J. Hrostowski and B. J. Alder—980
Far infrared spectrum and structure of disiloxane, J. R. Aronson, R. C. Lord and D. W. Robinson—1004
Far infrared spectrum of trimethylene oxide, Alfred Danti, W. J. Lafferty, and R. C. Lord—294(L)
Induced *Q*-branch in the vibration-rotation spectrum of HCl pressurized with argon, George C. Turrell, H. Vu, and B. Vodar—315(L)
Infrared absorption spectra of alkali metal nitrates and nitrites above and below the melting point, J. Greenberg and Leander J. Hallgren—900
Infrared absorption spectrum of $NdCl_3$, F. Varsanyi and G. H. Dieke—1616
Infrared and Raman spectra of C_6Br_5D, James R. Scherer, J. C. Evans, and John Overend—314
Infrared and raman spectra of fluorinated ethanes. XIII. 1,2-difluoroethane, Peter Klaboe and J. Rud Nielsen—1765
Infrared spectra and structure of the isomers of N_2F_2, Russell H. Sanborn—1855
Infrared spectra of alkyldiboranes. III. 1,2-dimethyl- and 1,2-diethyldiboranes, Walter J. Lehmann, Charles O. Wilson, Jr., and I. Shapiro—590
Infrared spectra of complexes of NO_2F with BF_3, PF_5, and SbF_5, Denys Cook, Stephen J. Kuhn and George A. Olah—1669
Infrared spectra of crystalline CD_3Cl and CD_3Br, David A. Dows—1742
Infrared spectra of lithium halide monomers, William Klemperer, W. G. Norris, Alfred Büchler and Alfred G. Emslie—1534
Infrared spectra of some unstable isomers of N_2O_4 and N_2O_3, I. C. Hisatsune, J. P. Devlin, and Yasuo Wada—714
Infrared studies of crystal benzene. IV. Absolute intensities, Willis B. Person and Charles A. Swenson—233
Light-induced *cis-trans* isomerization of nitrous acid formed by photolysis of hydrazoic acid and oxygen in solid nitrogen, John D. Baldeschwieler and George C. Pimentel—1008
Magnetic rotation spectra of nitric oxide in the near infrared, Glen A. Mann and C. D. Hause—1117
Mass spectrometric and infrared emission investigation of the vapor species in the B-S system at elevated temperatures, Armin Sommer, Patrick N. Walsh, and David White—296(L)
Molecular collision cross sections from infrared absorption measurements, Harold Babrov, George Ameer, and William Benesch—145
Near infrared absorption spectra of ortho- and para-H_2O in solid xenon and argon, Jay A. Glasel—252
Perturbation of molecular rotation-vibration energy levels by rare gases, D. H. Rank, D. P. Eastman, W. B. Birtley and T. A. Wiggins—323
Pressure dependence of some infrared and vacuum ultraviolet bands occurring in active nitrogen, Robert A. Young—1111
Rotational isomerism involving the 2–3 carbon-carbon bond of the 1-alkenes, L. A. Harrah and D. W. Mayo—298(L)
Search for a Jahn-Teller effect in IrF_6, Howard H. Claassen and Bernard Weinstock—436
Shapes and breadths of some molecular rotation-vibration band lines perturbed by rare gases, D. H. Rank, D. P. Eastman, W. B. Birtley, and T. A. Wiggins—327
Structure of potassium hydroxide: An x-ray and infrared study, James A. Ibers, Junji Kumamoto, and Robert G. Snyder—1164
Structure of the infrared Y bands of N_2, G. H. Dieke and D. F. Heath—432
Erratum and Addendum: Substituted methanes. XXIX. Vibrational spectra, potential constants, and calculated thermodynamic properties for dibromochloro-fluoromethane and bromodichlorofluoro-methane [J. Chem. Phys. **31**, 1633 (1959)], Robert L. Gilbert, Edward A. Piotrowski, Jerome M. Dowling, and Forrest F. Cleveland—1872(L)
Vibrational spectra of penta-deutero-fluoro-benzene, D. Steele, E. R. Lippincott, and J. Xavier—1241
Vibrational spectrum of crystalline potassium hydroxide, Robert G. Snyder, Junji Kumamoto, and James A. Ibers—1171

Absorption Spectra Microwave

Change of the isobutane molecule; Change of dipole moment of isotopic substitution, David R. Lide, Jr.—1519
Dipole moment of lithium hydride, Lennard Wharton, L. Peter Gold, and William Klemperer—1255(L)
Double minimum vibration in trimethylene oxide, Sunney I. Chan, John Zinn, and William D. Gwinn—295(L)
Electron spin resonance line shape of a polycrystalline CH radical, Roland Lefebvre—1826
Erratum: Microwave spectrum of acetyl cyanide [J. Chem. Phys. **31**, 882 (1959)], Lawrence C. Krisher—304(L)
Microwave spectrum, barrier to internal rotation, and quadrupole coupling of acetyl bromide, Lawrence C. Krisher—1237
Microwave spectrum of $CFCl_3$, Maurice W. Long, Quitman Williams and T. L. Weatherly—508
Microwave spectrum of quinuclidine, Lauren G. Johnson—949(L)
Microwave spectrum, structure, and dipole moment of formyl fluoride, Oliver H. LeBlanc, Jr., Victor W. Laurie, and William D. Gwinn—598
Microwave spectrum, structure, and dipole moment of propane, David R. Lide, Jr.—1514
Microwave spectrum, structure, dipole moment, and internal rotation of trimethyl silane, Louis Pierce and D. H. Petersen—907
Temperature variation of the linewidth in nonresonant microwave absorption, J. E. Boggs, A. P. Deam and Joe M. King—1852
Trimethylene oxide I. Microwave spectrum, dipole moment, and double minimum vibration, Sunney I. Chan, John Zinn, Jose Fernandez, and William D. Gwinn—1643

Absorption Spectra
Of Crystals

Absorption lines of Cr^{3+} in ruby, W. Low—1162
Absorption spectra of $MnCl_2$ and $MnBr_2$, J. W. Stout—303(L)
Absorption spectra of solid methane, ammonia, and ice in the vacuum ultraviolet, K. Dressler and O. Schnepp—270
Absorption spectra of solid xenon, krypton, and argon in the vacuum ultraviolet, O. Schnepp and K. Dressler—49

Crystal spectra of chromium tris-acetyl acetone, Animesh Chakravorty and Sadhan Basu—1266(L)
Effect of pressure on the *M* center in alkali halide crystals, S. Minomura and H. G. Drickamer—290
Electronic absorption spectrum of diphenylene in substitutional solid solid solution, Robin M. Hochstrasser—950(L)
Electronic transitions of rare earth ions in the infrared region, G. Mandel, R. P. Bauman, and E. Banks—192
Erratum: f^3 configuration in a crystalline field [J. Chem. Phys. **32**, 573 (1960)], Robert A. Satten and Jack S. Margolis—618(L)
Evidence for internal rotation in the fine structure of the infrared absorption of oxygen in silicon, H. J. Hrostowski and B. J. Alder—980
Infrared absorption spectrum of $NdCl_3$, F. Varsanyi and G. H. Dieke—1616
Infrared spectra of crystalline CD_3Cl and CD_3Br, David A. Dows—1742
Infrared studies of crystal benzene. II. Relative intensities, Charles A. Swenson and Willis B. Person—56
Infrared studies of crystal benzene. IV. Absolute intensities, Willis B. Person and Charles A. Swenson—233
Intermolecular coupling of vibrations in molecular crystals: A vibrational exciton approach, R. M. Hexter—1833
Note on the optical absorption of $MnCl_3$ and $MnBr_3$, R. Pappalardo—613(L)
Phosphorescence lifetime of benzene. An intermolecular heavy atom effect, a deuterium effect, and a temperature effect, M. R. Wright, R. P. Frosch and G. W. Robinson—934(L)
Polarization of the first two electronic transitions of pyrene, Robin M. Hochstrasser—459
Polarized absorption and fluorescence spectra of 2,6-dimethylnaphthalene at different temperatures, Adnan Zmerli and Henri Poulet—1177
Polarized visible spectra of crystalline trisoxalatometallates: The source of intensity, T. S. Piper and R. L. Carlin—608(L)
Preliminary analysis of U^{4+} ion spectra in crystals, Robert A. Satten, Donald Young, and Dieter M. Gruen—1139
Pressure effects in nickel dimethyl-glyoxime and related chelates J. C. Zahner and H. G. Drickamer—1625
Spectrum of Yb^{3+} in yttrium gallium garnet, R. Pappalardo and D. L. Wood—1733
Structure of potassium hydroxide: An x-ray and infrared study, James A. Ibers, Junji Kumamoto, and Robert G. Snyder—1164
Vibrational spectrum of crystalline potassium hydroxide, Robert G. Snyder, Junji Kumamoto, and James A. Ibers—1171

Absorption Spectra
Visible or Ultraviolet

Absorption lines of Cr^{3+} in ruby, W. Low—1162
Absorption spectra of anodic niobium oxide films, W. M. Graven, R. E. Salomon, and G. B. Adams, Jr.—954(L)
Absorption spectra of $MnCl_3$ and $MnBr_3$, J. W. Stout—303(L)
Absorption spectra of photo-oxide of mesonaphthodianthrene, Haruo Kuroda—1586(L)
Absorption spectra of solid methane, ammonia, and ice in the vacuum ultraviolet, K. Dressler and O. Schnepp—270
Absorption spectra of solid xenon, krypton, and argon in the vacuum ultraviolet, O. Schnepp and K. Dressler—49
Absorption spectrum of chlorine in the vacuum ultraviolet, Raymond P. Iczkowski, John L. Margrave, and John W. Green—1261(L)
Comparison of the effects of high pressure and low temperature on the absorption spectra of some condensed-ring aromatics, W. W. Robertson—362
Crystal spectra of chromium tris-acetyl acetone, Animesh Chakravorty and Sadhan Basu—1266(L)
Cuprous halide films on alkali halide crystals, L. M. Kraemer—991
Electronic absorption spectrum of diphenylene in substitutional solid solid solution, Robin M. Hochstrasser—950(L)
Electronic spectra of dimers: Derivation of the fundamental vibronic equation, Andrzej Witkowski and William Moffitt—872
Flash-absorption spectroscopy of free radicals in shock waves, R. M. Ikeda—311(L)
"Forbidden" character in allowed electronic transitions, Andreas C. Albrecht—156
Identification of colloidal sodium in sodium azide, Brian S. Miller—889
Kinetic absorption spectra recorded through flash-heated grids, L. S. Nelson and N. A. Kuebler—610(L)
Lowest triplet states of ethylene, Robert S. Mulliken—1596(L)
Metastable states of acridine orange in solution, G. Blauer and H. Linschitz—937(L)
Note on the optical absorption of $MnCl_3$ and $MnBr_3$, R. Pappalardo—613(L)
On the absorption spectrum of CF_3 and its vibrational analysis, D. E. Mann and B. A. Thrush—1731
Phosphorescence lifetime of benzene. An intermolecular heavy atom effect, a deuterium effect, and a temperature effect, M. R. Wright, R. P. Frosch and G. W. Robinson—934(L)
Polarization of the first two electronic transitions of pyrene, Robin M. Hochstrasser—459
Polarized absorption and fluorescence spectra of 2,6-dimethylnaphthalene at different temperatures, Adnan Zmerli and Henri Poulet—1177
Polarized visible spectra of crystalline trisoxalatometallates: The source of intensity, T. S. Piper and R. L. Carlin—608(L)
Preliminary analysis of U^{4+} ion spectra in crystals, Robert A. Satten, Donald Young, and Dieter M. Gruen—1139
Pressure dependence of some infrared and vacuum ultraviolet bands occuring in active nitrogen, Robert A. Young—1111
Pressure effects in nickel dimethyl-glyoxime and related chelates, J. C. Zahner and H. G. Drickamer—1625
Radiative lifetime of the $B\,^2\Sigma^+$ state in N_2O^+, I. E. Dayton, F. W. Dalby, and R. G. Bennett—179
Relations between ultraviolet and visible absorption peaks of iodine solutions, John Walkley, David N. Glew, and Joel H. Hildebrand—621(L)
Solvent effects on $n\rightarrow\pi^*$ transitions in pyrazine, V. G. Krishna and Lionel Goodman—381
Spectral solvent shift I. Paraffin hydrocarbon solvent interactions with polynuclear aromatic hydrocarbons, O. E. Weigang, Jr.—892
Spectrum of ReF_6, J. C. Eisenstein—1530
Spectrum of Yb^{3+} in yttrium gallium garnet, R. Pappalardo and D. L. Wood—1733
Sum rule for transition probabilities, William L. Clinton—1603
Theory for the triplet-triplet absorption spectra of porphyrins, Martin Gouterman—1523
Ultraviolet and structural studies of polythionates, R. M. Golding—1666
Ultraviolet spectrum of triptycene, Charles F. Wilcox, Jr.—1874(L)
Vibronic calculations in benzene, Andreas C. Albrecht—169

Accommodation Coefficients

Condensation coefficient of arsenic trioxide glass, A. B. Bestul and D. H. Blackburn—1274(L)
Observation of adsorption on an atomic scale, Gert Ehrlich, and F. G. Hudda—1253(L)

Beams, Atomic and Molecular

Analysis of reactive scattering in crossed molecular beams, Dudley R. Herschbach—1870(L)
Charge transfer between atomic hydrogen and N^+ and O^+, R. F. Stebbings, Wade L. Fite, and David G. Hummer—1226
Interchange of charge between gaseous molecules, Donald Rapp and Irene B. Ortenburger—1230
Quantum mechanical (phase shift) analysis of the differential elastic scattering of molecular beams, Richard B. Bernstein—795
Total collision cross sections for the interaction of molecular beams of cesium chloride with gases. Influence of the dipole-dipole force upon the scattering, Hugo Schumacher, Richard B. Bernstein, and Erhard W. Rothe—584
Velocity analysis of molecular beams generated from NaOH vapors, V. S. Rao and Richard C. Schoonmaker—1717

Catalysis

Method for investigating the order of chemiluminescent reactions, the diffusion coefficient of the labile reactants, and the catalytic efficiency of surfaces, Robert A. Young—1044
Quantitative considerations concerning catalysis at a semiconductor surface, C. G. B. Garrett—966
Surface catalyzed excitation with N and O atoms, Gene G. Mannella, Robert R. Reeves and Paul Harteck—636(L)

Chemical Reactions (see Kinetics of Reactions)

Combustion

On the assumptions underlying droplet vaporization and combustion theories, F. A. Williams—133

Crystal Growth

Growth poisoning of lithium fluoride from aqueous solutions, Gerald W. Sears—1068
Nucleation and growth of mercury crystals at low supersaturation, G. W. Sears—563

Crystalline State

Axial crystal fields in the ionic model, T. S. Piper and R. L. Carlin—1208
Comments on Dr. Schmalzried's Letter, S. P. Mitoff—941(L)
Conduction electrons in sodium tungsten bronze, Joseph M. Keller—232
Contribution of lattice vibrations to the order-disorder transformation in alloys, Peter J. Wojtowicz and John G. Kirkwood—1298
Dissolution kinetics at dislocation etch pits in single crystals of lithium fluoride, M. B. Ives and J. P. Hirth—517
Effective ionic charge in CdS, Frederick Keffer—1267(L)
Electrical conduction in magnesium oxide, Hermann Schamlzried—940(L)
Electron spin resonance in neutron-irradiated calcite, J. C. Kemp—1269(L)
Erratum: Lattice energies of the alkali halides and the electron affinities of the halogens [J. Chem. Phys. **31**, 1646 (1959)], Daniel Cubicciotti—1579(L)
Frequency distribution and the specific heat of NaCl at low temperatures, Elizabeth M. Arase and Robert D. Hatcher—1703
Frequency spectrum for a two-dimensional lattice, Jacob Neuberger and Robert D. Hatcher—265
Hyperfine structure of F-center spin resonance in sodium azide, F. F. Carlson, G. J. King, and B. S. Miller—1266(L)
Lattice vibrations in alkali halide crystals. II. Potassium and rubidium halides; cesium fluoride, Arnold M. Karo—7
Madelung constants of the cubic perovskite structures, F. G. Fumi and M. P. Tosi—1
Molecular rotation in crystals of N_2 and CO, Barbara C. Kohin—882
On the molecular nature of the dielectric anomalies in thiourea, Crispin Calvo—1720
On the presence of NaOH in crystalline NaCl, D. A. Otterson—227
Preparation and crystal structures of RuC and OsC, Charles P. Kempter and M. R. Nadler—1580(L)
Proton magnetic resonance study of barium bromate monohydrate, A. A. Silvidi and J. W. McGrath—1788
Structure of potassium hydroxide: An x-ray and infrared study, James A. Ibers, Junji Kumamoto, and Robert G. Snyder—1164
Surface specific heat of an isotropic solid at low temperatures, Marc Dupuis, Robert Mazo and Lars Onsager—1452
Tables for the calculation of lattice sums, Philip Rabinowitz and George Weiss—1272(L)
Thermal expansion of delta and epsilon zirconium hydrides, Charles P. Kempter, Reed O. Elliott, and Karl A. Gschneidner, Jr.—837
Vibrational spectra of orthorhombic metaboric acid, J. L. Parsons—1860
Vibrational spectrum of crystalline potassium hydroxide, Robert G. Snyder, Junji Kumamoto, and James A. Ibers—1171

Crystal Structure

Comments on Carpenter's paper "Density of the bonding electrons in diamond," James A. Ibers—299(L)
Crystal structure of β-Ga_2O_3, S. Geller—676
Density of the bonding electrons in diamond, G. B. Carpenter—300(L)
Interatomic distances in FeS_2, CoS_2, and NiS_2, Norman Elliott—903
Preparation and properties of scandium dihydride, Joseph C. McGuire and Charles P. Kempter—1584(L)

Adsorption (see Surface Phenomena)

Valence structures of the higher borides, William N. Lipscomb and Doyle Britton—275

Detonation (see also Shock Waves)

Comments on hypervelocity wave phenomena in condensed explosives, R. F. Chaiken—760

Deuterium (see Isotopes)

Dielectrics

Continuum-model treatment of long-range intermolecular forces. I. Pure substances, Bruno Linder—668
Dielectric behavior and crystal structure of ethyl and vinyl stearate, Martin G. Broadhurst and Edwin R. Fitzgerald—210
Dielectric constants of imperfect gases. I. Helium, argon, nitrogen, and methane, D. R. Johnston, G. J. Oudemans, and R. H. Cole—1310
Dielectric relaxation of isoamyl bromide, Sivert H. Glarum—639
Dielectric relaxation of polar liquids, Sivert H. Glarum—1371

Dielectric study of some liquid alkyl nitrites, R. F. Grant, D. W. Davidson and Peter Gray—1712
Dipole moment and conformation of 2-chlorocyclohexanone, Samuel Yaroslavsky and Ernst D. Bergmann—635(L)
Dipole moment of isotactic and atactic poly-vinyl iso-butyl ether, M. Takeda, Y. Imamura, S. Okamura and T. Higashimura—631(L)
Dipole moments of hydrocarbons, David R. Lide, Jr.—1879(L)
Effects of pressure on dielectric relaxation in a chlorinated diphenyl, Thomas A. Perls and L. Bruce Wilner—753
Electric strength of methane and deuteromethane, J. C. Devins and R. W. Crowe—1578(L)
On the molecular nature of the dielectric anomalies in thiourea, Crispin Calvo—1720
Temperature variation of the linewidth in nonresonant microwave absorption, J. E. Boggs, A. P. Deam and Joe M. King—1852
Theoretical dielectric behavior of an ethyl stearate-heneicosane mixture, Martin G. Broadhurst—221
Trimethylene oxide I. Microwave spectrum, dipole moment, and double minimum vibration, Sunney I. Chan, John Zinn, Jose Fernandez, and William D. Gwinn—1643

Diffusion

Diffusion in a linear lattice, Igor W. Plesner—652
Diffusion in inhomogeneous media, Stephen Prager—122
Diffusion of weak electrolytes, W. H. Stockmayer—1290
Diffusion theory of chemical reaction, J. L. Wood—1587(L)
Flow equations and frames of reference for isothermal diffusion in liquids, John G. Kirkwood, Robert L. Baldwin, Peter J. Dunlop, Louis J. Gosting and Gerson Kegeles—1505
Method for investigating the order of chemiluminescent reactions, the diffusion coefficient of the labile reactants, and the catalytic efficiency of surfaces, Robert A. Young—1044
On the dynamical theory of diffusion in crystals. V. A random-walk treatment of the heat of transport, Alan R. Allnatt and Stuart A. Rice—573
Oxygen diffusion in periclase crystals, Y. Oishi and W. D. Kingery—905
Rapid determination of gaseous diffusion coefficients by means of gas chromatography apparatus, J. Calvin Giddings and Spencer L. Seager—1579(L)
Self-diffusion of oxygen in single crystal and polycrystalline aluminum oxide, Y. Oishi and W. D. Kingery—480
Some further remarks on the coefficient of self-diffusion in simple dense fluids, Stuart A. Rice—1376
Sublimation of small sodium chloride spheres into argon, D. H. Whitmore and J. B. Moser—917

Dipole Moment

Change of the isobutane molecule; Change of dipole moment of isotopic substitution, David R. Lide, Jr.—1519
Dipole moment of lithium hydride, Lennard Wharton, L. Peter Gold, and William Klemperer—1255(L)
Microwave spectrum, structure, and dipole moment of formyl fluoride, Oliver H. LeBlanc, Jr., Victor W. Laurie, and William D. Gwinn—598
Microwave spectrum, structure, and dipole moment of propane, David R. Lide, Jr.—1514

Electrical Properties

Comments on Dr. Schmalzried's Letter, S. P. Mitoff—941(L)
Conduction electrons in sodium tungsten bronze, Joseph M. Keller—232
Electrical conduction in magnesium oxide, Hermann Schmalzried—940(L)
Erratum: Electrical properties of poly-copper phthalocyanine [J. Chem. Phys. **32**, 324 (1960)], A. Epstein and B. S. Wildi—618(L)
Hole and electron drift mobilities in anthracene, Oliver H. LeBlanc, Jr.—626(L)
Organic semiconductors II. The electrical resistivity of organic molecular complexes, Mortimer M. Labes, Robert Sehr, and Monisha Bose—868
Sparking potential and molecular structure of unsaturated hydrocarbon gases, R. W. Crowe and J. C. Devins—413
Structure of glass-forming halides. II. Liquid zinc chloride, J. D. Mackenzie and W. K. Murphy—366

Electrochemistry

Cube-root law for the activity coefficient quotient of the dissociation of HSO_4^- ion, George E. Walrafen—947(L)
Diffusion of weak electrolytes, W. H. Stockmayer—1290
Excess free energy in dehydrogenated palladium, Sister Judith Mary Singer, O. P. and Gilbert W. Castellan—633(L)
Flow adaptation of the isotopic dilution method for the study of ionic hydration, H. W. Baldwin and H. Taube—206
New type of freezing point apparatus. The freezing points of dilute lanthanum chloride solutions, G. Scatchard, B. Vonnegut and D. W. Beaumont—1292
Theory of the diffuse double layer, Frank H. Stillinger, Jr. and John G. Kirkwood—1282
Transport processes in liquid alloys. II. The electrical force on an ion, Paul C. Mangelsdorf, Jr.—1151

Electron Affinity

Erratum: Lattice energies of the alkali halides and the electron affinities of the halogens [J. Chem. Phys. **31**, 1646 (1959)], Daniel Cubicciotti—1579(L)
Isoelectronic extrapolation of electron affinities, B. Edlén—98
Remarks on doubly excited states of the negative atomic hydrogen ion, E. Holøien—301(L)
Some remarks on the electron affinity of atomic lithium, E. Holøien—309(L)

Electron Diffraction

Equilibrium bond lengths in methane and deuteromethane as determined by electron diffraction and spectroscopic methods, L. S. Bartell, Kozo Kuchitsu, and R. J. deNeui—1254(L)
Molecular structure of iodine heptafluoride, Robert E. LaVilla and S. H. Bauer—182
Molecular structure of lithium chloride dimer. Thermodynamic functions of Li_2X_2 (X= Cl, Br, I)., S. H. Bauer, Tadashi Ino, and Richard F. Porter—685

Emission Spectra

Chemiluminescence of ethylene formed probably from ethylene in an inert matrix, Theodore D. Goldfarb and George C. Pimentel—105
Emission spectra of erbium in the scheelite structure, L. G. Van Uitert and R. R. Soden—567
Emission spectrum of the OH radical in an oxyacetylene flame in the 1.5-μ region, William H. Rogge, Frederick L. Yarger, and Fred P. Dickey—453
Emission spectrum of trivalent holmium in the scheelite structure, L. G. Van Uitert and R. R. Soden—1532
Spectroscopy of fluorine flames. I. Hydrogen-fluorine flame and the vibration-rotation emission spectrum of HF, D. E. Mann, B. A. Thrush, D. R. Lide, Jr., J. J. Ball, and N. Acquista—1731

Energy Transfer

Collisional deactivation of vibrationally excited *sec*-butyl-d_1 radicals produced by chemical activation. R. E. Harrington, B. S. Rabinovitch and M. R. Hoare—744
Correlation of experimental results for the vibrational relaxation of nitric oxide, Frank Robben, Philip R. Monson, and John J. Allport—630(L)
Efficiency of energy transfer in a solution of PPO in xylene, Isadore B. Berlman—1124
Energy transfer in liquid hydrocarbons excited by γ-rays G. R. Freeman—957(L)
Multiple vibrational relaxation in gaseous dibromomethane, Norman J. Meyer—487
Optical transparency and resistance to flash heating, W. F. Libby—1588(L)
Quantum mechanical calculation of harmonic oscillator transition probabilities in a one-dimensional impulsive collision, Kurt E. Shuler and Robert Zwanzig—1777
Quantum yield for energy transfer by resonance, Aadne Ore—31
Transfer of excitation energy in solid solutions of anthracene-polystyrene and 9,10-diphenylanthracene-polystyrene, L. J. Basile and A. Weinreb—1028
Vibrational transitions and the intermolecular potential, Robert C. Amme and Sam Legvold—91

Equation of State

Errata: Contributions of bound, metastable, and free molecules to the second virial coefficient and some properties of double molecules, and Initial pressure dependence of thermal conductivity and viscosity [J. Chem. Phys. **31**, 1531, 1545 (1959)] Daniel E. Stogryn and Joseph O. Hirschfelder—942(L)

Errata

Errata: Contributions of bound, metastable, and free molecules to the second virial coefficient and some properties of double molecules, and Initial pressure dependence of thermal conductivity and viscosity [J. Chem. Phys. **31**, 1531, 1545 (1959)] Daniel E. Stogryn and Joseph O. Hirschfelder—942(L)
Erratum: Electrical properties of poly-copper phthalocyanine [J. Chem. Phys. **32**, 324 (1960)] A, Epstein and B. S. Wildi—618(L)
Erratum: Electronic structure of nitric oxide [J. Chem. Phys. **30**, 673 (1959)], H. Brion, C. Moser and M. Yamazaki—1871 (L)
Erratum: Energy levels of a slightly asymmetric top [J. Chem. Phys. **32**, 1591 (1960)], James A. Norris and Victor W. Laurie—1256(L)
Erratum: f^2 configuration in a crystalline field [J. Chem. Phys. **32**, 573 (1960)], Robert A. Satten and Jack S. Margolis—618(L)
Erratum: Improved molecular orbitals and the valence bond theory [J. Chem. Phys. **33**, 301 (1960)], A. C. Hurley—1872(L)
Erratum: Infrared and raman spectra of fluorinated ethanes. XII. 1,1,2,2-tetrafluoroethane [J. Chem. Phys. **32**, 899 (1960)], Peter Klaboe and J. Rud Nielsen—617(L)
Erratum: Lattice energies of the alkali halides and the electron affinities of the halogens [J. Chem. Phys. **31**, 1646 (1959)], Daniel Cubicciotti—1579(L)
Erratum: Mechanics of atomic recombination reactions, Don L. Bunker [J. Chem. Phys. **32**, 1001 (1960)]—617(L)
Erratum: Microwave spectrum of acetyl cyanide [J. Chem. Phys. **31**, 882 (1959)], Lawrence C. Krisher—304(L)
Erratum: NMR spectra of some simple epoxides [J. Chem. Phys. **32**, 1378 (1960)], C. A. Reilly and J. D. Swalen—617(L)
Erratum: Reflected shock technique for studying fast chemical reactions, [J. Chem. Phys. **30**, 257 (1959)] Roger A. Strehlow and Arthur Cohen—618
Erratum: Some observations on atomic exchange in NO [J. Chem. Phys. **32**, 1579 (1960)], W. Spindel and Marvin J. Stern—942(L)
Erratum: Validity and consequences of Schreinemakers' theorem on ternary distillation lines [J. Chem. Phys. **31**, 308 (1959)], A. E. Korvezee and J. L. Meyering—304(L)
Erratum and Addendum: Substituted methanes. XXIX. Vibrational spectra, potential constants, and calculated thermodynamic properties for dibromochlorofluoromethane and bromodichlorofluoromethane [J. Chem. Phys. **31**, 1633 (1959)], Robert L. Gilbert, Edward A. Piotrowski, Jerome M. Dowling, and Forrest F. Cleveland—1872(L)

Faraday Effect

Magnetic rotation spectra of nitric oxide in the near infrared, Glen A. Mann and C. D. Hause—1117

Field Emission Microscopy

Observation of adsorption on an atomic scale, Gert Ehrlich and F. G. Hudda—1253(L)

Films (see Surface Phenomena)

Flames

Nitric oxide—fluorine dilute diffusion flame, Donald Rapp and Harold S. Johnston—695

Fluorescence

Charge transfer and fluorescence quenching, Dilip Kumar Majumdar and Sadhan Basu—1199
Efficiency of energy transfer in a solution of *PPO* in xylene, Isadore B. Berlman—1124
Transfer of excitation energy in solid solutions of anthracene-polystyrene and 9,10-diphenylanthracene-polystyrene, L. J. Basile and A. Weinreb—1028
Vibrational effect on the polarization of molecular crystal fluorescence, E. G. McRae—932(L)

Free Radicals

Behavior of the free radicals trapped in gamma-irradiated compounds which contain hydrogen bonds, Zenichiro Kuri, Yuzuru Fujiwara, Hisashi Ueda and Shoji Shida—1884(L)
Collisional deactivation of vibrationally excited *sec*-butyl-d_1 radicals produced by chemical activation, R. E. Harrington, B. S. Rabinovitch and M. R. Hoare—744
Decomposition of activated *sec*-butyl radicals from different sources and unimolecular reaction theory, R. E. Harrington, B. S. Rabinovitch and H. M. Frey—1271(L)
Electron spin resonance of electrochemically generated free radicals: The isomeric dinitrobenzene mononegative ions, August H. Maki and David H. Geske—825
EPR observation of the steady-state ethyl radical concentration in the radiolysis of liquid ethane, Richard W. Fessenden and Robert H. Schuler—935(L)
EPR studies of the tetracyanoethylene anion radical, W. D. Phillips, J. C. Rowell, and S. I. Weissman—626(L)
Flash-absorption spectroscopy of free radicals in shock waves, R. M. Ikeda—311(L)
Light-induced *cis-trans* isomerization of nitrous acid formed by photolysis of hydrazoic acid and oxygen in solid nitrogen, John D. Baldeschwieler and George C. Pimentel—1008

Method for investigating the order of chemiluminescent reactions, the diffusion coefficient of the labile reactants, and the catalytic efficiency of surfaces, Robert A. Young—1044
Methyl affinitites determined by photolysis of azomethane, C. Steel and M. Szwarc—1677
On the isomerization of *n*-butyl radicals, Alvin S. Gordon and James R. McNesby—1882(L)
Orientation dependence of magnetic hyperfine structure in free radicals, S. M. Blinder—748
Paramagnetic resonance absorption of triphenylmethyl, D. B. Chesnut and G. J. Sloan—637(L)
Paramagnetic-resonance studies of irradiated high-density polyethylene. I. Radical species and the effect of environment on their behavior, Elliott J. Lawton, J. S. Balwit, and R. S. Powell—395
Paramagnetic-resonance studies of irradiated high-density polyethylene. II. The effect of irradiation dose on the radical species trapped at room temperature, Elliott J. Lawton, J. S. Balwit, and R. S. Powell—405
Polycrystalline resonance line shape of π-electron radicals, Himan Sternlicht—1128
Quantum yield for energy transfer by resonance, Aadne Ore—31
Relation between the proton hyperfine interaction and the C^{13}-H^1 spin-spin coupling in free radicals, R. A. Bernheim and T. P. Das—1813
Spin densities in organic free radicals, Thomas H. Brown, D. H. Anderson, and H. S. Gutowsky—720

Free Rotation (see Rotation)

Gases

Dielectric constants of imperfect gases. I. Helium, argon, nitrogen, and methane, D. R. Johnston, G. J. Oudemans, and R. H. Cole—1310
Errata: Contributions of bound, metastable, and free molecules to the second virial coefficient and some properties of double molecules, and Initial pressure dependence of thermal conductivity and viscosity [J. Chem. Phys. **31**, 1531, 1545 (1959)] Daniel E. Stogryn and Joseph O. Hirschfelder—942(L)
Kinetic theory of dense gases, Henry B. Hollinger and C. F. Curtiss—1386
Potential curves for N_2, NO, and O_2, Joseph T. Vanderslice, Edward A. Mason, William G. Maisch and Ellis R. Lippincott—614(L)
Separation of gas mixtures in a supersonic jet. II. Behavior of helium-argon mixtures and evidence of shock separation, S. Alexander Stern, P. C. Waterman, and T. F. Sinclair—805
Statistical mechanics of the non-uniform gas, P. L. Auer and S. Tamor—1426

Glasses

Condensation coefficient of arsenic trioxide glass, A. B. Bestul and D. H. Blackburn—1274 (L)
Structure of glass-forming halides. II. Liquid zinc chloride, J. D. Mackenzie and W. K. Murphy—366

Heat Capacity (see Thermodynamic Properties)

Lattice heat capacity of the rare earths. The heat capacities of yttrium and lutetium from 15-350°K, L. D. Jennings, R. E. Miller and F. H. Spedding—1849

High Pressures

Comparison of the effects of high pressure and low temperature on the absorption spectra of some condensed-ring aromatics, W. W. Robertson—362
Compression and phase transitions of solid NH_3, SiF_4, H_2S, and CF_4, John W. Stewart—128
Effect of pressure on the *M* center in alkali halide crystals, S. Minomura and H. G. Drickamer—290
Effects of pressure on dielectric relaxation in a chlorinated diphenyl, Thomas A. Perls and L. Bruce Wilner—753
Effects of pressure on proton spin-lattice relaxation in several degassed organic liquids, A. W. Nolle and P. P. Mahendroo—863
First-order phase transitions of six normal paraffins at elevated pressures, R. R. Nelson, W. Webb, and J. A. Dixon—1755
Pressure effects in nickel dimethylglyoxime and related chelates, J. C. Zahner and H. G. Drickamer—1625

Hindered Rotation (see Rotation)

Energy levels of a slightly asymmetric top, John E. Beam and H. L. Davis—1255(L)
Erratum: Energy levels of a slightly asymmetric top [J. Chem. Phys. **32**, 1591 (1960)], James A. Norris and Victor W. Laurie—1256(L)

Infrared Spectra (see Absorption Spectra)

Calculated band intensities for CO_2 from infrared dispersion data, Bertram Schurin—1878(L)
Potential energy curves for OH, Robert J. Fallon, Irwin Tobias and Joseph T. Vanderslice—1638
Vibrational spectra of orthorhombic metaboric acid, J. L. Parsons—1860

Intensities of Spectra

Calculated band intensities for CO_2 from infrared dispersion data, Bertram Schurin—1878(L)
Effect of hydrogen bonding on the intensity of the CD raman band of $CDCl_3$, D. G. Rea—1875(L)
"Forbidden" character in allowed electronic transitions, Andreas C. Albrecht—156
Infrared studies of crystal benzene. II. Relative intensities, Charles A. Swenson and Willis B. Person—56
Infrared studies of crystal benzene. IV. Absolute intensities, Willis B. Person and Charles A. Swenson—233
Polarized visible spectra of crystalline trisoxalatometallates: The source of intensity. T. S. Piper and R. L. Carlin—608(L)
Radiative lifetime of the $B\,^2\Sigma^+$ state in N_2O^+, I. E. Dayton, F. W. Dalby, and R. G. Bennett—179

Isotope Effects

Calculation of equilibrium constants for several isotope exchange reactions involving N_2O_4, E. U. Monse—312(L)
Comment on the homogeneous exchange reaction between hydrogen and deuterium, A. Cimino, E. Molinari, and G. G. Volpi—616(L)
Effect of deuterium substitution on the lifetime of the phosphorescent triplet state of naphthalene, H. Sternlicht and H. M. McConnell—302(L)
Equilibrium constant for isotope exchange in ammonia from infrared spectra, Llewellyn H. Jones—1585(L)
Equilibrium in the exchange of tritium between ammonia and hydrogen and the zero-point energy difference between NH_3 and NH_2T, Joel R. Gutmann and Max Wolfsberg—1592(L)
Erratum: Some observations on atomic exchange in NO [J. Chem. Phys. **32**, 1579 (1960)], W. Spindel and Marvin J. Stern—942(L)
Flow adaptation of the isotopic dilution method for the study of ionic hydration, H. W. Baldwin and H. Taube—206

Isotope (continued)

Increasing the intensity of C^{13} NMR signals by a flowing sample method, S. Forsén and A. Rupprecht—1888(L)
Isotope effects on reaction rates and the reaction coordinate, Max Wolfsberg—21
Nonmolecular nature of the nitric-oxide-inhibited thermal decomposition of *n*-butane, Aron Kuppermann and John G. Larson—1264(L)
Note on secondary isotope effects in reaction rates, Max Wolfsberg—2
Partition function ratios for molecules containing nitrogen isotopes, G. M. Begun and W. H. Fletcher—1083
Phosphorescence lifetime of benzene. An intermolecular heavy atom effect, a deuterium effect, and a temperature effect, M. R. Wright, R. P. Frosch and G. W. Robinson—934(L)
Physical properties of isotopically substituted classical fluids, W. A. Steele—1619
Relative quenching cross sections in the reaction of $Hg(6^3P_1)$ atoms with isotopic N_2O molecules, Morton Z. Hoffman and Richard B. Bernstein—526
Separation of boron isotopes. IV. The methyl sulfide-BF_3 system, A. A. Palko and J. S. Drury—779
Single-state fractionation factor for the system: Oxygen vs cobalt di(salicylal)-ethylenediimine-oxygen, L. L. Brown and J. S. Drury—1889(L)
Size effects among isotopic molecules, Hubert W. Joy and W. F. Libby—1276(L)
Spin exchange in biradicals, D. C. Reitz and S. I. Weissman—700
Trimethylene oxide I. Microwave spectrum, dipole moment, and double minimum vibration, Sunney I. Chan, John Zinn, Jose Fernandez, and William D. Gwinn—1643
Vapor pressures and related thermodynamic properties of the isotopic nitric oxide molecules, Jacob Bigeleisen—1774

Kinetics of Reaction

Boltzmann equation and inverse collisions, J. T. O'Toole and J. S. Dahler—1487
Charge transfer between atomic hydrogen and N^+ and O^+, R. F. Stebbings, Wade L. Fite, and David G. Hummer—1226
Collisional deactivation of vibrationally excited *sec*-butyl-d_1 radicals produced by chemical activation, R. E. Harrington, B. S. Rabinovitch and M. R. Hoare—744
Comment on the homogeneous exchange reaction between hydrogen and deuterium, A. Cimino, E. Molinari, and G. G. Volpi—616(L)
Decomposition of activated *sec*-butyl radicals from different sources and unimolecular reaction theory, R. E. Harrington, B. S. Rabinovitch and H. M. Frey—1271(L)
Detection of order in Ni_3Co, Y. L. Yao—741
Diffusion theory of chemical reaction, J. L. Wood—1587(L)
Erratum: Mechanics of atomic recombination reactions, Don L. Bunker [J. Chem. Phys. **32**, 1001 (1960)]—617(L)
Erratum: Reflected shock technique for studying fast chemical reactions, [J. Chem. Phys. **30**, 257 (1959)] Roger A. Strehlow and Arthur Cohen—618(L)
Interchange of charge between gaseous molecules, Donald Rapp and Irene B. Ortenburger—1230
Isotope effects on reaction rates and the reaction coordinate, Max Wolfsberg—21
Kinetic absorption spectra recorded through flash-heated grids, L. S. Nelson and N. A. Kuebler—610(L)
Kinetics of the alpha radiolysis of carbon monoxide, P. S. Rudolph and S. C. Lind—705
Mechanism of ozone decomposition, H. J. Schumacher—938(L)
Mercury photosensitized decomposition of cylohexane at high temperatures, S. Arai, S. Sato and S. Shida—1277(L)
Metastable states of acridine orange in solution, G. Blauer and H. Linschitz—937(L)
Method for investigating the order of chemiluminescent reactions, the diffusion coefficient of the labile reactants, and the catalytic efficiency of surfaces, Robert A. Young—1044
Methyl affinities determined by photolysis of azomethane, C. Steel and M. Szwarc—1677
Nitric oxide—fluorine dilute diffusion flame, Donald Rapp and Harold S. Johnston—695
Non-molecular nature of the nitric-oxide-inhibited thermal decomposition of *n*-butane, Aron Kuppermann and John G. Larson—1264(L)
Note on secondary isotope effects in reaction rates, Max Wolfsberg—2
Nuclear spin conservation in ortho-para hydrogen conversion, Doyle Britton and Z Z. Hugus, Jr.—1830
On the dissociation of polyatomic molecules, Robert J. Rubin and Kurt E. Shuler—438
On the existence of energy chains in the ozone decomposition, Sidney W. Benson—939(L)
On the isomerization of *n*-butyl radicals, Alvin S. Gordon and James R. McNesby—1882(L)
Proton transfer studies by nuclear magnetic resonance. I. Diffusion control in the reaction of ammonium ion in aqueous acid, Merle T. Emerson, Ernest Grunwald, and Robert A. Kromhout—547
Proton transfer studies by nuclear magnetic resonance. II. Rate constants and mechanism for the reaction, $CH_3NH_3^+ + OH_2 + NH_2CH_3$, in aqueous acid, Ernest Grunwald, Photios J. Karabatsos, Robert A. Kromhout and E. Lee Purlee—556
Quantum statistical mechanical theory of the rate of exchange chemical reactions in the gas phase, Tsunenobu Yamamoto—281
Rate of the reaction of nitrogen atoms with ethylene, John T. Herron—1273(L)
Recombination kinetics of atomic oxygen at room temperature, C. B. Krestchmer and H. L. Petersen—948(L)
Recombination of oxygen atoms in the absence of O_3, J. E. Morgan, L. Elias and H. I. Schiff—930(L)
Relative quenching cross sections in the reaction of $Hg(6^3P_1)$ atoms with isotopic N_2O molecules, Morton Z. Hoffman and Richard B. Bernstein—526
Sublimation of small sodium chloride spheres into argon, D. H. Whitmore and J. B. Moser—917
Temperature dependence of the rates of addition of oxygen atoms to olefins, R. J. Cvetanović—1063
Three-body recombination of oxygen atoms, Ernest Bauer and Morris Salkoff—1202
Transient species in the radiolytic polymerization of cyanogen, C. E. Melton and P. S. Rudolph—1594(L)

Light Scattering

Critical opalescence of polystyrene in cyclohexane, P. Debye, H. Coll, and D. Woermann—1745

Liquids

Cell method in the grand canonical ensemble, J. M. Richardson and S. R. Brinkley, Jr.—1467
Classical and quantum mechanical hypervirial theorems, Joseph O. Hirschfelder—1462
Dielectric relaxation of polar liquids, Sivert H. Glarum—1371
Line shapes of electron paramagnetic resonance signals produced by powders, glasses and viscous liquids, Fritz Kurt Kneubühl—1074

Nuclear magnetic relaxation in a strongly associated liquid, C.R.K. Murthy and R. D. Spence—945(L)
On the theory of the critical point of a simple fluid, Melville S. Green—1403
Physical properties of isotopically substituted classical fluids, W. A. Steele—1619
Radial distribution functions from the Born-Green integral equation, A. A. Broyles—456
Scaled particle theory of fluids, E. Helfand, H. Reiss, H. L. Frisch and J. L. Lebowitz—1379
Some tests of the superposition approximation in the liquid phase, Frank P. Buff and R. Brout—1417
Structure of glass-forming halides, II. Liquid zinc chloride, J. D. Mackenzie and W. K. Murphy—366
X-ray scattering by a cell-model liquid, L. H. Lund—1086

Magnetic Resonance

Analysis of high-resolution NMR spectra by iterative methods, Ragnar A. Hoffman—1256(L)
"Average energy approximation" in spin-coupling calculations, Martin Karplus—941(L)
Biradical paradox, Harden M. McConnell—1868(L)
Carbon-13 hyperfine splittings in semiquinones, D. C. Reitz, F. Dravnieks, and J. E. Wertz—1880(L)
Cl^{35} NMR contact shifts in aqueous cobaltous chloride solutions, D. B. Chesnut—1234
Conduction electrons in sodium tungsten bronze, Joseph M. Keller—232
Effect of deuterium substitution on the lifetime of the phosphorescent triplet state of naphthalene, H. Sternlicht and H. M. McConnell—302(L)
Effect of thermal treatment on paramagnetic resonance spectra of rare earth impurities in calcium fluoride, E. Friedman and W. Low—1275(L)
Effects of pressure on proton spin-lattice relaxation in several degassed organic liquids, A. W. Nolle and P. P. Mahendroo—863
Electron coupling of nuclear spins. IV. Temperature dependence in substitutes ethanes, John C. Schug, Paul E. McMahon, and H. S. Gutowsky—843
Electron spin resonance in neutron-irradicated calcite, J. C. Kemp—1269(L)
Electron spin resonance line shape of a polycrystalline CH radical, Roland Lefebvre—1826
Electron spin resonance of an irradiated single crystal of N-acetylglycine, Ichiro Miyagawa, Yukio Kurita, and Walter Gordy—1599
Electron spin resonance of electrochemically generated free radicals: The isomeric dinitrobenzene mononegative ions, August H. Maki and David H. Geske—825
Electron spin resonances in irradiated potassium azide, A. J. Shuskus, C. G. Young, O. R. Gilliam, and Paul W. Levy—622(L)
EPR observation of the steady-state ethyl radical concentration in the radiolysis of liquid ethane, Richard W. Fessenden and Robert H. Schuler—935(L)
EPR studies of the tetracyanoethylene anion radical, W. D. Phillips, J. C. Rowell, and S. I. Weissman—626(L)
Erratum: NMR Spectra of some simple epoxides [J. Chem. Phys. **32**, 1378 (1960)], C. A. Reilly and J. D. Swalen—617(L)
F^{19} spectra of phosphorus (V) fluorides, W. Mahler and E. L. Muetterties—636(L)
Green and purple sulphur: Electron spin resonance studies, H. E. Radford and F. O. Rice—774
H^1-P^{31} spin coupling in phosphate esters, Gerald O. Dudek—624(L)
Identification of colloidal sodium in sodium azide, Brian S. Miller—889
Increasing the intensity of C^{13} NMR signals by a flowing sample method, S. Forsén and A. Rupprecht—1888(L)
Ligand spin densities and magnetic properties of some aminotroponeimine chelates of nickel, W. D. Phillips and R. E. Benson—607(L)
Line shapes of electron paramagnetic resonance signals produced by powders, glasses and viscous liquids, Fritz Kurt Kneubühl—1074
N^{14} pure quadrupole resonances of several nitriles, Hisao Negita and P. J. Bray—1876(L)
Nuclear magnetic relaxation in a strongly associated liquid, C.R.K. Murthy and R. D. Spence—945(L)
NMR analysis of CF_3CF_2CFICl: Example of an unexpected spin-coupling constant, L. M. Crapo and C. H. Sederholm—1583(L)
Nuclear magnetic resonance in solid adamantane, David W. McCall and Dean C. Douglas—777
Nuclear magnetic resonance spectra of systems of the A_3B_2C type: Proton magnetic resonance spectra and the absolute signs of the proton-proton spin coupling constants in ethyl acetylene and ethyl mercaptan, P. T. Narasimhan and Max T. Rogers—727
Nuclear magnetic resonance spectra of the ABX_3 type: Field dependence and the relative signs of spin-spin coupling constants, Valdemar J. Kowalewski and Dora G. de Kowalewski—1793
Nuclear magnetic resonance spectrum of B^{11} in inderite, K. S. Pennington and H. E. Petch—329
Nuclear spin-lattice relaxation in solutions, Richard W. Mitchell and Melvin Eisner—86
Observation of the overhauser effect on carbon-13 nuclear resonance signals, D. J. Parker, G. A. McLaren and J. J. Conradi—629(L)
On the analysis of high-resolution NMR spectra by iterative methods, C. A. Reilly and J. D. Swalen—1257(L)
Orientation dependence of magnetic hyperfine structure in free radicals, S. M. Blinder—748
Paramagnetic relaxation in solutions of VO^{++}, R. N. Rogers and G. E. Pake—1107
Paramagnetic-resonance absorption of ions with spin $\frac{5}{2}$; Mn^{++} in calcite, Chihiro Kikuchi and L. M. Matarrese—601
Paramagnetic resonance absorption of triphenylmethyl, D. B. Chesnut and G. J. Sloan—637(L)
Paramagnetic resonance of gamma-irradiated single crystals of ice at 77°K, J. A. McMillan, M. S. Matheson and B. Smaller—609(L)
Paramagnetic-resonance studies of irradiated high-density polyethylene. I. Radical species and the effect of environment on their behavior, Elliott J. Lawton, J. S. Balwit, and R. S. Powell—395
Paramagnetic-resonance studies of irradiated high-density polyethylene II. The effect of irradiation dose on the radical species trapped at room temperature, Elliott J. Lawton, J. S. Balwit, and R. S. Powell—405
Paramagnetic resonance study of hyperfine interactions in single crystals containing α, α-diphenyl-β-picrylhydrazyl, Robert W. Holmberg, Ralph Livingston, and William T. Smith, Jr.—541
Paramagnetic studies of radiation damage in silica gel, Harold W. Kohn—1588(L)
Polycrystalline resonance line shape of π-electron radicals, Himan Sternlicht—1128
Proton magnetic resonance studies of nonstoichiometric titanium hydride, B. Stalinski, C. K. Coogan, and H. S. Gutowsky—933(L)
Proton magnetic resonance study of barium bromate monohydrate, A. A. Silvidi and J. W. McGrath—1788

Magnetic Resonance (continued)

Proton magnetic resonance study of barium bromide monohydrate, J. W. McGrath and A. A. Silvidi—644
Proton resonance in diphenyl picryl hydrazyl, M. E. Anderson, G. E. Pake and T. R. Tuttle, Jr.—1581(L)
Proton resonance shifts in pyrene mononegative ion at 4.2°K, M. E. Anderson, P. J. Zandstra and T. R. Tuttle, Jr.—1591(L)
Proton spin coupling by pi electrons, Martin Karplus—1842
Proton transfer studies by nuclear magnetic resonance. I. Diffusion control in the reaction of ammonium ion in aqueous acid, Merle T. Emerson, Ernest Grunwald, and Robert A. Kromhout—547
Proton transfer studies by nuclear magnetic resonance. II. Rate constants and mechanism for the reaction, $CH_3NH_3^+ + OH_2 + NH_2CH_3$, in aqueous acid, Ernest Grunwald, Photios J. Karabatsos, Robert A. Kromhout and E. Lee Purlee—556
Relation between the proton hyperfine interaction and the C^{13}-H^1 spin-spin coupling in free radicals, R. A. Bernheim and T. P. Das—1813
Satellite lines in paramagnetic resonance spectra, A. van Roggen—1589(L)
Spin densities in organic free radicals, Thomas H. Brown, D. H. Anderson, and H. S. Gutowsky—720
Spin exchange in biradicals, D. C. Reitz and S. I. Weissman—700
Temperature dependence of proton relaxation times in aqueous solution of paramagnetic ions. II. $CrCl_3$, Thomas H. Brown, Robert A. Bernheim, and H. S. Gutowsky—1593(L)
Theory of ESR linewidths of free radicals, Daniel Kivelson—1094
Theory of hyperfine interactions in aromatic radicals, A. D. McLachlan, H. H. Dearman, and R. Lefebvre—65
Theory of singlet-triplet splittings in large biradicals, Harden M. McConnell—115
Variational calculation of magnetic hyperfine interaction. Nitrogen atom, T. P. Das and A. Mukherjee—1808

Magnetic Susceptibilities

Antiferromagnetic coupling and covalent bonding in almost totally ionic alts, Thomas R. Waite—256
Diamagnetism as a test of wave functions for some simple molecules, K. E. Banyard—832
Hyperfine structure of F-center spin resonance in sodium azide, F. F. Carlson, G. J. King, and B. S. Miller—1266(L)
Quantum mechanical approximations to chemical systems, R. E. Glick and D. F. Kates—308(L)

Mass Spectra

Charge transfer reactions producing intrinsic chemical change: Methyl, methylene, and hydrogen radicals produced from argon and methane reactions, C. E. Melton—647
Dissociation of methyl bromide by nuclear isomeric transition of 4.4-hr Br^{80m}, S. Wexler and G. R. Anderson—850
Excitation and negative ions in H_2O, G. J. Schulz—1661
Fragmentation patterns of halogenated pentaboranes, I. Shapiro and H. Landesman—1590(L)
Heterogeneous reactions studied by mass spectrometry. I. The reaction of $B_2O_3(s)$ with $H_2O(g)$, David H. Meschi, William A. Chupka, and Joseph Berkowitz—530
Heterogeneous reactions studied by mass spectrometry. II. The reaction of $Li_2O(s)$ with $H_2O(g)$, Joseph Berkowitz, David J. Meschi, and William A. Chupka—533
Ionization of Cu, Ag, and Au by electron impact, Normand C. Blais and Joseph B. Mann—100
Mass spectra of aluminum (III) halides and the heats of dissociation of $Al_2F_6(g)$ and $LiF \cdot AlF_3(g)$, Richard F. Porter and Ernest Zeller—858
Mass spectra of vapors in the Al-AlF_3 and Al-LiF-AlF_3 systems, Richard F. Porter—951(L)
Mass spectrometric and infrared emission investigation of the vapor species in the B-S system at elevated temperatures, Armin Sommer, Patrick N. Walsh, and David White—296(L)
Mass spectrometric determination of the dissociation energies of the molecules AgAu, AgCu and AuCu, Marcel Ackerman, Fred E. Stafford and Jean Drowart—1783
Mass spectrometric study of the heats of dimerization of the alkali chlorides, Thomas A. Milne and H. Michael Klein—1628
Mass spectrometric study of the osmium-oxygen system, R. T. Grimley, R. P. Burns, and Mark G. Inghram—308(L)
Mass spectrum and appearance potentials of tetrafluorohydrazine, John T. Herron and Vernon H. Dibeler—1595(L)
Multiple ionization in argon and krypton by electron impact, R. E. Fox—200
Quantitative relations in the mass spectra of *n*-paraffins, Norman D. Coggeshall—1247
Secondary positive ion-emission from platinum, R. C. Bradley, A. Arking and D. S. Beers—764
Secondary reactions in a gas discharge, Irene B. Ortenburger, Martin Hertzberg and Richard A. Ogg, Jr.—579
Strength of the N—N bond in tetrafluorohydrazine, Charles B. Colburn and Frederic A. Johnson—1869(L)
Threshold law for the probability of excitation of molecules by photon impact. A study of the photoionization efficiencies of Br_2, I_2, HI, and CH_3I, H. D. Morrison, H. Hurzeler, Mark G. Inghram and H. E. Stanton—821

Mechanics, Classical

Classical and quantum mechanical hypervirial theorems, Joseph O. Hirschfelder—1462

Mechanics, Quantum

Ambiguity in the determination of self-consistent bond orders, G. G. Hall—953(L)
Antiferromagnetic coupling and covalent bonding in almost totally ionic salts, Thomas R. Waite—256
Approximate electronic energy surfaces from cuspless wave functions, Carl E. Wulfman—1567
"Average energy approximations" in spin-coupling calculations, Martin Karplus—941(L)
Axial crystal fields in the ionic model, T. S. Piper and R. L. Carlin—1208
Biradical paradox, Harden M. McConnell—1868(L)
Concise method for forming two-center integrals of operators, J. M. Robinson—734
Diamagnetism as a test of wave functions for some simple molecules, K. E. Banyard—832
Dynamical Jahn-Teller effect in hydrocarbon radicals, W. D. Hobey and A. D. McLachlan—1694
Dynamics of the quasi-linear molecule, Walter H. Thorson and Ichiro Nakagawa—994
Electronic spectra of dimers: Derivation of the fundamental vibronic equation, Andrzej Witkowski and William Moffitt—872
Electronic structure and hyperfine structure constants of NO molecule, Chun C. Lin, Katsunori Hijikata, and Michiko Sakamoto—878
Energy of interaction of two helium atoms, Neal Moore—471
Erratum: Electronic structure of nitric oxide [J. Chem. Phys. **30**, 673 (1959)], H. Brion, C. Moser and M. Yamazaki—1871(L)
Erratum: f^3 configuration in a crystalline field [J. Chem. Phys. **32**, 573 (1960)], Robert A. Satten and Jack S. Margolis—618(L)

Erratum: Improved molecular orbitals and the valence bond theory [J. Chem. Phys. **33**, 301 (1960)], A. C. Hurley—1872(L)
Erratum: Potential energy curves for HF and LiH [J. Chem. Phys. **32**, 698, 1453 (1960)], Robert J. Fallon, Joseph T. Vanderslice and Edward A. Mason—944(L)
First excited $^1\Sigma_g^+$ state of H_2: A double-minimum problem, Ernest R. Davidson—1577(L)
Forces in molecules. I. Application of the virial theorem, William L. Clinton—1603
Helium atom wave function from Slater orbitals of nonintegral principal quantum number, Lawrence C. Snyder—1710
Improved molecular orbitals and the valence bond theory, A. C. Hurley—301(L)
Interaction energies for the H-H_2 and H_2-H_2 systems, Joseph T. Vanderslice and Edward A. Mason—492
Inter and intra-atomic correlation energies and theory of core-polarization, Oktay Sinanoglu—1212
Intermolecular coupling of vibrations in molecular crystals: A vibrational exciton approach, R. M. Hexter—1833
Jahn-Teller distortions in cyclobutadiene cyclopentadienyl radical, and benzene positive and negative ions, Lawrence C. Snyder—619(L)
Metal-metal bonding in dicobalt hexacarbonyl diphenylacetylene, David A. Brown—1037
Modification of Koopmans' theorem for conjugated hydrocarbons, J. R. Hoyland and Lionel Goodman—946(L)
Molecular orbital treatment of hydrogen with central potentials and modified boundary conditions, James M. Peek and Edwin N. Lassettre—1803
Note on Hurley's "Improved molecular orbitals and the valence bond theory," P. Phillipson and R. S. Mulliken—615(L)
On excited bound states of negative atomic ions, E. Holøien—310(L)
One-center wave function for the methane molecule, Anthony F. Saturno and Robert G. Parr—22
$^1\Sigma^+$ excited states of carbon monoxide, H. Lefebvre-Brion, C. M. Moser and R. K. Nesbet—931(L)
Optical rotatory dispersion of transition-metal complexes, Satoru Sugano—1885(L)
Potential curves for N_2, NO, and O_2, Joseph T. Vanderslice, Edward A. Mason, William G. Maisch and Ellis R. Lippincott—614(L)
Potential energy curves for CO, Irwin Tobias, Robert J. Fallon, and Joseph T. Vanderslice—1638
Power series expansions of vibrational potentials. I. The Heitler-London potential for H_2, Charles L. Beckel—1885(L)
Power series expansions of vibrational potentials. II. Two classical potentials for ionic molecules, Edward J. Finn and Charles L. Beckel—1887(L)
Proton spin coupling by pi electrons, Martin Karplus—1842
Quantum mechanical approximations to chemical systems, R. E. Glick and D. F. Kates—308(L)
Quantum mechanical calculation of harmonic oscillator transition probabilities in a one-dimensional impulsive collision, Kurt E. Shuler and Robert Zwanzig—1777
Quantum mechanical (phase shift) analysis of the differential elastic scattering of molecular beams, Richard B. Bernstein—795
Relation between the proton hyperfine interaction and the C^{13}-H^1 spin-spin coupling in free radicals, R. A. Bernheim and T. P. Das—1813
Second-order perturbation energy of the two-electron atom, Charles W. Scherr—317(L)
Separation theorem for degenerate eigenvalues, D. W. Davies—781
Simple configuration interaction wavefunctions. III. The three-electron atomic system. An analytic study, Milos Machacek and Charles W. Scherr—242
Some intra-atomic correlation correction studies, M. Krauss and B. J. Ransil—840
Spin densities in several odd alternant radicals, H. H. Dearman and H. M. McConnell—1877(L)
Study of molecular integrals I. The two-center exchange integrals, R. C. Sahni and C. D. LaBudde—1015
Study of molecular integrals II. The three-center one electron and two-electron integrals, C. D. LaBudde and R. C. Sahni—1022
Sum rule for transition probabilities, William L. Clinton—1603
Theorem on separability of electron pairs, Tadashi Arai—95
Theory of hyperfine interactions in aromatic radicals, A. D. McLachlan, H. H. Dearman, and R. Lefebvre—65
Theory of singlet-triplet splittings in large biradicals, Harden M. McConnell—115
Three-body recombination of oxygen atoms, Ernest Bauer and Morris Salkoff—1202
Three remarks on molecular orbital theory of complex molecules, Robert G. Parr—1183
Ultraviolet spectrum of triptycene, Charles F. Wilcox, Jr.—1874(L)
Variational calculation of magnetic hyperfine interaction. Nitrogen atom, T. P. Das and A. Mukherjee—1808

Mechanics, Statistical

Boltzmann equation and inverse collisions, J. T. O'Toole and J. S. Dahler—1487
Cell method in the grand canonical ensemble, J. M. Richardson and S. R. Brinkley, Jr.—1467
Classical and quantum mechanical hypervirial theorems, Joseph O. Hirschfelder—1462
Contribution of lattice vibrations to the order-disorder transformation in alloys, Peter J. Wojtowicz and John G. Kirkwood—1298
Density correlations, critical opalescence, and the free energy of non-uniform fluids, Marshall Fixman—1357
Distribution functions of a fluid in an external potential field; Application to physical adsorption, William S. Steele and Marvin Ross—464
Ensemble method in the theory of irreversibility, Robert Zwanzig—1338
Ensembles of maximum entropy, Joseph E. Mayer—1484
Errata: Contributions of bound, metastable, and free molecules to the second virial coefficient and some properties of double molecules, and Initial pressure dependence of thermal conductivity and viscosity [J. Chem. Phys. **31**, 1531, 1545 (1959)] Daniel E. Stogryn and Joseph O. Hirschfelder—942(L)
Excluded volume effect of linear polymer molecules, Michio Kurata, Walter H. Stockmayer, and Antonio Roig—151
Kinetic theory of dense gases, Henry B. Hollinger and C. F. Curtiss—1386
Kinetic theory of the moderately dense rigid sphere fluid. IV. The fluxes of matter, momentum and energy in a mixture, Robert A. Harris and Stuart A. Rice—1046
Kinetic theory of the moderately dense rigid-sphere fluid. V. Relaxation in momentum space, Robert A. Harris and Stuart A. Rice—1055
Mean square length of a hindered alkane chain, Richard P. Smith—876
Molecular friction in dilute gases, James T. O'Toole and John S. Dahler—1496
New solution of the Ising problem for a rectangular lattice, C. A. Hurst and H. S. Green—1059
On molecular chaos and the Kirkwood superposition hypothesis, Harold Grad—1342
On the dynamical theory of diffusion in crystals. V. A random-walk treatment of the heat of transport, Alan R. Allnatt and Stuart A. Rice—573

Mechanics, Statistical (continued)

On the theory of the critical point of a simple fluid, Melville S. Green—1403
Open first-order stochastic processes, Paul J. Gans—691
Potential curves for N_2, NO, and O_2, Joseph T. Vanderslice, Edward A. Mason, William G. Maisch and Ellis R. Lippincott—614(L)
Quantum corrections for transport coefficients, Sang-Il Choi and John Ross—1324
Quantum statistical mechanical theory of the rate of exchange chemical reactions in the gas phase, Tsunenobu Yamamoto—281
Radial distribution functions from the Born-Green integral equation, A. A. Broyles—456
Scaled particle theory of fluids, E. Helfand, H. Reiss, H. L. Frisch and J. L. Lebowitz—1379
Some further remarks on the coefficient of self-diffusion in simple dense fluids, Stuart A. Rice—1376
Some tests of the superposition approximation in the liquid phase, Frank P. Buff and R. Brout—1417
Statistical mechanical theory of the viscosity coefficients of binary liquid solutions, Richard J. Bearman and Peter F. Jones—1432
Statistical mechanics of molecular ions, Robert N. Varney—1708
Statistical mechanics of the non-uniform gas, P. L. Auer and S. Tamor—1426
Statistical mechanics of transport processes. XIV. Linear relations in multicomponent systems, John D. Kirkwood and Donald D. Fitts—1317
Structure of transport equations, S. Tamor—1421
Studies in molecular dynamics. II. Behavior of a small number of elastic spheres, B. J. Alder and T. E. Wainwright—1439
Theory of "melting" of the helical form in double chains of the DNA type, Bruno H. Zimm—1349
Theory of the diffuse double layer, Frank H. Stillinger, Jr. and John G. Kirkwood—1282
Utilization of order-disorder theory in physical adsorption. I. Fundamental equations, S. Bumble and J. M. Honig—424

Metals

Contribution of lattice vibrations to the order-disorder transformation in alloys, Peter J. Wojtowicz and John G. Kirkwood—1298
Detection of order in Ni_3Co, Y. L. Yao—741
Identification of colloidal sodium in sodium azide, Brian S. Miller—889
Number of *3d* electrons in iron, S. K. Joshi—1261(L)
On the structure of dilute solutions of metals, E. Charles Evers—618(L)
Proton magnetic resonance studies of non-stoichiometric titanium hydride, B. Stalinski, C. K. Coogan, and H. S. Gutowsky—933(L)
Transport processes in liquid alloys. II. The electrical force on an ion, Paul C. Mangelsdorf, Jr.—1151

Microwave Spectra (see Absorption Spectra)

Molecular Beams

Dipole moment of lithium hydride, Lennard Wharton, L. Peter Gold, and William Klemperer—1255(L)

Molecular Films (see Surface Phenomena)

Molecular Spectra (see Absorption Spectra, Emission Spectra, Fluorescence and Raman Spectra

Dipole moment of lithium hydride, Lennard Wharton, L. Peter Gold, and William Klemperer—1255(L)
Ultraviolet spectrum of triptycene, Charles F. Wilcox, Jr.—1874(L)
Vibrational spectra of orthorhombic metaboric acid, J. L. Parsons—1860

Molecular Structure and Constants (see also Absorption Spectra, Fluorescence, Raman Spectra, Electron & X-ray Diffraction)

Absorption spectrum of chlorine in the vacuum ultraviolet, Raymond P. Iczkowski, John L. Margrave, and John W. Green—1261(L)
Application of symmetry principles to the rotation-internal torsion levels of molecules with two equivalent methyl groups, Rollie J. Myers, and E. Bright Wilson, Jr.—186
Biradical paradox, Harden M. McConnell—1868(L)
Bond lengths and nuclear quadrupole coupling in vinyl halides, E. Spinner—611(L)
Bond lengths and nuclear quadrupole coupling in vinyl halides, E. Bright Wilson, Jr.—612(L)
Classical and quantum mechanical hypervirial theorems, Joseph O. Hirschfelder—1462
Dielectric study of some liquid alkyl nitrites, R. F. Grant, D. W. Davidson and Peter Gray—1712
Dipole moment and conformation of 2-chlorocyclohexanone, Samuel Yaroslavsky and Ernst D. Bergmann—635(L)
Dipole moment of lithium hydride, Lennard Wharton, L. Peter Gold, and William Klemperer—1255(L)
Dipole moments of hydrocarbons, David R. Lide, Jr.—1879(L)
Dissociation energies of diatomic molecules, G. R. Somayajulu—1541
Double minimum vibration in trimethylene oxide, Sunney I. Chan, John Zinn, and William D. Gwinn—295(L)
Dynamical Jahn-Teller effect in hydrocarbon radicals, W. D. Hobey and A. D. McLachlan—1694
Dynamics of the quasi-linear molecule, Walter H. Thorson and Ichiro Nakagawa—994
Electron coupling of nuclear spins. IV. Temperature dependence in substituted ethanes, John C. Schug, Paul E. McMahon, and H. S. Gutowsky—843
Electronic structure and hyperfine structure constants of NO molecule, Chun C. Lin, Katsunori Hijikata, and Michiko Sakamoto—878
Energy levels of a slightly asymmetric top, John E. Beam and H. L. Davis—1255(L)
Equilibrium bond lengths in methane and deuteromethane as determined by electron diffraction and spectroscopic methods L. S. Bartell, Kozo Kuchitsu, and R. J. deNeui—1254(L)
Equilibrium in the exchange of tritium between ammonia and hydrogen and the zeropoint energy difference between NH_3 and NH_2T, Joel R. Gutmann and Max Wolfsberg—1592(L)
Erratum: Energy levels of a slightly asymmetric top [J. Chem. Phys. **32**, 1591 (1960)], James A. Norris and Victor W. Laurie—1256(L)
Erratum: Infrared and raman spectra of fluorinated ethanes XII. 1,1,2,2-tetrafluoroethane [J. Chem. Phys. **32**, 899 (1960)], Peter Klaboe and J. Rud Nielsen—617(L)
Erratum: Microwave spectrum of acetyl cyanide [J. Chem. Phys. **31**, 882 (1959)], Lawrence C. Krisher—304(L)
Erratum: Potential energy curves for HF and LiH [J. Chem. Phys. **32**, 698, 1453 (1960)], Robert J. Fallon, Joseph T. Vanderslice and Edward A. Mason—944(L)
Estimation of the ionization potential and dissociation energy of molecular astatine, Robert W. Kiser—1265(L)
Excitation and negative ions in H_2O, G. J. Schulz—1661

Far infrared spectrum and structure of disiloxane, J. R. Aronson, R. C. Lord and D. W. Robinson—1004
Far infrared spectrum of trimethylene oxide, Alfred Danti, W. J. Lafferty, and R. C. Lord—294(L)
First excited $^1\Sigma_g^+$ state of H_2: A double-minimum problem, Ernest R. Davidson—1577(L)
F^{19} spectra of phosphorus (V) fluorides, W. Mahler and E. L. Muetterties—636(L)
Force constants for NH_4^+ and ND_4^+, S. Sundaram—708
Forces in molecules. I. Application of the virial theorem, William L. Clinton—603
Infrared and Raman spectra of fluorinated ethanes. XIII. 1,2-difluoroethane, Peter Klaboe and J. Rud Nielsen—1765
Infrared spectra and structure of the isomers of N_2F_2, Russell H. Sanborn—1855
Infrared spectra of lithium halide monomers, William Klemperer, W. G. Norris, Alfred Büchler and Alfred G. Emslie—1534
Jahn-Teller distortions in cyclobutadiene, cyclopentadienyl radical, and benzene positive and negative ions, Lawrence C. Snyder—619(L)
Ligand spin densities and magnetic properties of some aminotroponeimine chelates of nickel, W. D. Phillips and R. E. Benson—607(L)
Microwave spectrum, barrier to internal rotation, and quadrupole coupling of acetyl bromide, Lawrence C. Krisher—1237
Microwave spectrum of $CFCl_3$, Maurice W. Long, Quitman Williams and T. L. Weatherly—508
Microwave spectrum, structure, and dipole moment of formyl fluoride, Oliver H. LeBlanc, Jr., Victor W. Laurie, and William D. Gwinn—598
Microwave spectrum, structure, and dipole moment of propane, David R. Lide, Jr.—1514
Microwave spectrum, structure, dipole moment, and internal rotation of trimethyl silane, Louis Pierce and D. H. Petersen—907
Molecular orbital treatment of hydrogen with central potentials and modified boundary conditions, James M. Peek and Edwin N. Lassettre—1803
Molecular structure correlations, Børge Bak and Lise Hansen-Nygaard—418
Molecular structure of iodine heptafluoride, Robert E. LaVilla and S. H. Bauer—182
Molecular structure of lithium chloride dimer. Thermodynamic functions of Li_2X_2 (X= Cl, Br, I)., S. H. Bauer, Tadashi Ino, and Richard F. Porter—685
Note on the internal rotation-barrier in ethanic compounds, Martin Karplus—316(L)
Nuclear magnetic resonance spectra of systems of the A_3B_2C type: Proton magnetic resonance spectra and the absolute signs of the proton-proton spin coupling constants in ethyl acetylene and ethyl mercaptan, P. T. Narasimhan and Max T. Rogers—727
On the absorption spectrum of CF_2 and its vibrational analysis, D. E. Mann and B. A. Thrush—1731
On the assignment of the lowest triplet state in benzene, Andreas C. Albrecht—937(L)
On the equilibrium C-H distance in methane, D. P. Stevenson and James A. Ibers—762
One-center wave function for the methane molecule, Anthony F. Saturno and Robert G. Parr—22
$^1\Sigma^+$ excited states of carbon monoxide, H. Lefebvre-Brion, C. M. Moser and R. K. Nesbet—931(L)
Out-of-plane CH vibrations in some polynuclear aromatic hydrocarbons, Milan Randić—710
Potential curves for N_2, NO, and O_2, Joseph T. Vanderslice, Edward A. Mason, William G. Maisch and Ellis R. Lippincott—614(L)
Potential energy curves for CO, Irwin Tobias, Robert J. Fallon, and Joseph T. Vanderslice—1638
Power series expansions of vibrational potentials. I. The Heitler-London potential for H_2, Charles L. Beckel—1885(L)
Power series expansions of vibrational potentials. II. Two classical potentials for ionic molecules, Edward J. Finn and Charles L. Beckel—1887(L)
Preparation and crystal structures of RuC and OsC, Charles P. Kempter and M. R. Nadler—1580(L)
Proton resonance shifts in pyrene mononegative ion at 4.2°K, M. E. Anderson, P. J. Zandstra and T. R. Tuttle, Jr.—1591(L)
Raman spectrum of gaseous CF_4, B. Monostori and A. Weber—1867(L)
Some intra-atomic correlation correction studies, M. Krauss and B. J. Ransil—840
Some neglected subcases of predissociation in diatomic molecules, R. S. Mulliken—247
Spectrum of ReF_6, J. C. Eisenstein—1530
Spin densities in several odd alternant radicals, H. H. Dearman and H. M. McConnell—1877(L)
Structure of the infrared Y bands of N_2, G. H. Dieke and D. F. Heath—432
Structure of the isobutane molecule; Change of dipole moment of isotopic substitution, David R. Lide, Jr.—1519
Study of molecular integrals I. The two center exchange integrals, R. C. Sahni and C. D. LaBudde—1015
Study of molecular integrals II. The three-center one electron and two-electron integrals, C. D. LaBudde and R. C. Sahni—1022
Theory of hyperfine interactions in aromatic radicals, A. D. McLachlan, H. H. Dearman, and R. Lefebvre—65
Transferability of Urey-Bradley force constants. IV. The methyl halides, John Overend and James R. Scherer—446
Transferability of Urey-Bradley force constants. V. The bromoethylenes, James R. Scherer and John Overend—1680
Trimethylene oxide I. Microwave spectrum, dipole moment, and double minimum vibration, Sunney I. Chan, John Zinn, Jose Fernandez, and William D. Gwinn—1643
Ultraviolet and structural studies of polythionates, R. M. Golding—1666
Vibrational spectra of orthorhombic metaboric acid, J. L. Parsons—1860
Vibrational spectra of penta-deutero-fluoro-benzene, D. Steele, E. R. Lippincott, and J. Xavier—1241
Vibronic calculations in benzene, Andreas C. Albrecht—169

Nuclear Quadrupole Resonance

Halogen bond character in the alkyl halides, B. P. Dailey—1641
Induction studies in several groups of halogen-containing organic compounds by their Cl^{35}, Br^{79}, or Br^{81} pure quadrupole resonance spectra, H. O. Hooper and P. J. Bray—334
N^{14} pure quadrupole resonances of several nitriles, Hisao Negita and P. J. Bray—1876(L)
Nuclear magnetic resonance spectrum of B^{11} in inderite, K. S. Pennington and H. E. Petch—329

Nuclear Resonance (see Magnetic Resonance)

Analysis of high-resolution NMR-spectra by iterative methods, Ragnar A. Hoffman—1256(L)
C^{13} chemical shifts in CO and CO_2, Raymond Ettinger, Philip Blume, Andrew Patterson, Jr., and Paul C. Lauterbur—1597(L)
On the analysis of high-resolution NMR spectra by iterative methods, C. A. Reilly and J. D. Swalen—1257(L)
Proton resonance shifts in pyrene mononegative ion at 4.2°K, M. E. Anderson, P. J. Zandstra and T. R. Tuttle, Jr.—1591(L)

Optical Activity

Optical and other electronic properties of polymers, Ignacio Tinoco, Jr.—1332
Optical rotatory dispersion of transition-metal complexes, Satoru Sugano—1883(L)

Phase Transitions

Critical solution phenomenon in two-component liquid systems. The system water-ethylene glycol mono-isobutyl ether, De F. P. Rudd and B. Widom—1815

Phosphors

Activation center in magnesium fluorogermanate phosphors, G. Kemeny and C. H. Haake—783
Phosphorescence lifetime of benzene. An intermolecular heavy atom effect, a deuterium effect, and a temperature effect, M. R. Wright, R. P. Frosch and G. W. Robinson—934(L)

Photochemistry

Chemiluminescence of ethylene formed probably from methylene in an inert matrix, Theodore D. Goldfarb and George C. Pimentel—105
Kinetics of excited molecules. II. Dissociation processes, Gerald B. Porter and B. T. Connelly—81
Light-induced *cis-trans* isomerization of nitrous acid formed by photolysis of hydrazoic acid and oxygen in solid nitrogen, John D. Baldeschwieler and George C. Pimentel—1008
Mechanism of ozone decomposition, H. J. Schumacher—938(L)
Mercury photosensitized decomposition of cyclohexane at high temperatures, S. Arai, S. Sato and S. Shida—1277(L)
Methyl affinities determined by photolysis of azomethane, C. Steel and M. Szwarc—1677
On the existence of energy chains in the ozone decomposition, Sidney W. Benson—939(L)
Photoconductivity and photolysis in cadmium iodide, Richard A. Fotland—956(L)
Photolysis of carbon dioxide, Bruce H. Mahan—959
Primary processes in the gaseous photolysis of polyatomic molecules. I. Biacetyl, Jean T. Dubois—229
Production of vibrationally excited S_2 in the isothermal flash photolysis of S_2Cl_2, W. D. McGrath—297(L)
Relative quenching cross sections in the reaction of $Hg(6^3P_1)$ atoms with isotopic N_2O molecules, Morton Z. Hoffman and Richard B. Bernstein—526
Threshold law for the probability of excitation of molecules by photon impact. A study of the photoionization efficiencies of Br_2, I_2, HI, and CH_3I, J. D. Morrison, H. Hurzeler, Mark G. Inghram, and H. E. Stanton—821

Photoconductivity

Absorption spectra of photo-oxide of mesonaphthodianthrene, Haruo Kuroda—1586(L)
Generation of free carriers in photoconducting anthracene. I., W. Moore and M. Silver—1671
Hole and electron drift mobilities in anthracene, Oliver H. LeBlanc, Jr.—626(L)
Photoconductivity and photolysis in cadmium iodide, Richard A. Fotland—956(L)

Photoionization

Threshold law for the probability of excitation of molecules by photon impact. A study of the photoionization efficiencies of Br_2, I_2, HI, and CH_3I, J. D. Morrison, H. Hurzeler, Mark G. Inghram, and H. E. Stanton—821

Polymers

Compression of flexible chain molecules in solution, Robert Simha and J. L. Zakin—1790
Critical opalescence of polystyrene in cyclohexane, P. Debye, H. Coll, and D. Woermann—1745
Excluded volume effect of linear polymer molecules, Michio Kurata, Walter H. Stockmayer, and Antonio Roig—151
Gradient dependence of intrinsic viscosity of freely flexible linear macromolecules, Anton Peterlin—1799
Mean square length of a hindered alkane chain, Richard P. Smith—876
Molecular size distribution and gelation of irradiated copolymers, Mitio Inokuti—1607
Neighbor interactions and internal rotations in polymer molecules. IV. Solvent effect on internal rotations, Shneior Lifson and Irwin Oppenheim—109
Normal vibrations of the polymer molecules of helical configuration, Hiroyuki Tadokoro—1558
Optical and other electronic properties of polymers, Ignacio Tinoco, Jr.—1332
Osmotic pressure of moderately concentrated polymer solutions, Marhsall Fixman—370
Streaming birefrigence of rigid macromolecules in general two-dimensional laminar flow, Harold Wayland—769
Theory of dilute polymer solutions. II., W. R. Krigbaum, D. K. Carpenter, M. Kaneko and A. Roig—921
Theory of "melting" of the helical form in double chains of the DNA type, Bruno H. Zimm—1349
Transient species in the radiolytic polymerization of cyanogen, C. E. Melton and P. S. Rudolph—1594(L)

Proteins

Effect of binding of ions and other small molecules on protein structure VIII. On the isomerization of serum albumin in acidic media, John R. Cann—1410

Quadrupole Resonance (see Nuclear Quadrupole Resonance)

Quantum Mechanics (see Mechanics, Quantum)

Analysis of high-resolution NMR-spectra by iterative methods, Ragnar A. Hoffman—1256(L)
Classical and quantum mechanical hypervirial theorems, Joseph O. Hirschfelder—1462
Energy-levels of a slightly asymmetric top, John E. Beam and H. L. Davis—1255(L)
Erratum: Energy levels of a slightly asymmetric top [J. Chem. Phys. 32, 1591 (1960)], James A. Norris and Victor W. Laurie —1256(L)
Lowest triplet states of ethylene, Robert S. Mulliken—1596(L)
Nuclear spin conservation in ortho-para hydrogen conversion, Doyle Britton and Z Z. Hugus, Jr.—1830
On the analysis of high-resolution NMR spectra by iterative methods, C. A. Reilly and J. D. Swalen—1257(L)
On the temporal evolution of isolated dynamical systems, S. Golden and H. C. Longuet-Higgins—1479
Potential curves for N_2, NO, and O_2, Joseph T. Vanderslice, Edward A. Mason, William G. Maisch and Ellis R. Lippincott—614(L)

Radiation Chemistry

Atomic and molecular hydrogen yields from irradiated acids, Ralph Livingston and A. J. Weinberger—499
Dissociation of methyl bromide by nuclear isomeric transition of 4.4-hr Br^{80m}, S. Wexler and G. R. Anderson—850

Efficiency of energy transfer in a solution of PPO in xylene, Isadore B. Berlman—1124
Energy transfer in liquid hydrocarbons excited by γ-rays, G. R. Freeman—957(L)
EPR observation of the steady-state ethyl radical concentration in the radiolysis of liquid ethane, Richard W. Fessenden and Robert H. Schuler—935(L)
Gamma radiolysis of propane, B. F. Birdwell and George W. Crawford—928
Kinetics of the alpha radiolysis of carbon monoxide, P. S. Rudolph and S. C. Lind—705
Paramagnetic-resonance of gamma-irradiated single crystals of ice at 77°K, J. A. McMillan, M. S. Matheson and B. Smaller —609(L)
Paramagnetic-resonance studies of irradiated high-density polyethylene. I. Radical species and the effect of environment on their behavior, Elliott J. Lawton, J. S. Balwit, and R. S. Powell—395
Paramagnetic-resonance studies of irradiated high-density polyethylene. II. The effect of irradiation dose on the radical species trapped at room temperature, Elliott J. Lawton, J. S. Balwit, and R. S. Powell—405
Paramagnetic studies of radiation damage in silica gel, Harold W. Kohn—1588(L)
Radiolysis of cyclohexane. I. Pure liquid cyclohexane and cyclohexane-benzene solutions, G. R. Freeman—71
Transient species in the radiolytic polymerization of cyanogen, C. E. Melton and P. S. Rudolph—1594(L)

Radiochemistry

Erratum: Some observations on atomic exchange in NO [J. Chem. Phys. 32, 1579 (1960)], W. Spindel and Marvin J. Stern—942(L)

Raman Spectra

CN stretching bands in the raman spectra of some group Ib and Group IIb complex cyanides, G. W. Chantry and R. A. Plane—736
Effect of hydrogen bonding on the intensity of the CD raman band of $CDCl_3$, D. G. Rea—1875(L)
Erratum: Infrared and raman spectra of fluorinated ethanes. XII. 1,1,2,2-tetrafluoroethane [J. Chem. Phys. 32, 899 (1960)], Peter Klaboe and J. Rud Nielsen—617(L)
Infrared and raman spectra of C_6Br_5D, James R. Scherer, J. C. Evans, and John Overend—314
Infrared and raman spectra of fluorinated ethanes. XIII. 1,2-difluoroethane, Peter Klaboe and J. Rud Nielsen—1765
Raman spectrum of gaseous CF_4, B. Monstori and A. Weber—1867(L)
Search for a Jahn-Teller effect in IrF_6, Howard H. Claassen and Bernard Weinstock—436
Erratum and Addendum: Substituted methanes. XXIX. Vibrational spectra, potential constants, and calculated thermodynamic properties for dibromochlorofluoromethane and bromodichlorofluoromethane [J. Chem. Phys. 31, 1633 (1959)], Robert L. Gilbert, Edward A. Piotrowski, Jerome M. Dowling, and Forrest F. Cleveland—1872(L)
Vibrational spectra of penta-deutero-fluoro-benzene, D. Steele, E. R. Lippincott, and J. Xavier—1241

Reaction Rates (see Kinetics of Reaction)

Rotation

Application of symmetry principles to the rotation-internal torsion levels of molecules with two equivalent methyl groups, Rollie J. Myers, and E. Bright Wilson, Jr.—186
Erratum: Microwave spectrum of acetyl cyanide [J. Chem. Phys. 31, 882 (1959)], Lawrence C. Krisher—304(L)
Evidence for internal rotation in the fine structure of the infrared absorption of oxygen in silicon, H. J. Hrostowski and B. J. Alder—980
Microwave spectrum, barrier to internal rotation, and quadrupole coupling of acetyl bromide, Lawrence C. Krisher—1237
Microwave spectrum, structure, dipole moment, and internal rotation of trimethyl silane, Louis Pierce and D. H. Petersen —907
Molecular rotation in crystals of N_2 and CO, Barbara C. Kohin —882
Note on the internal rotation barrier in ethanic compounds, Martin Karplus—316(L)
Note on the internal rotation problem, William L. Clinton—632(L)
Optical rotatory dispersion of transition-metal complexes, Satoru Sugano—1883(L)
Rotational isomerism involving the 2-3 carbon-carbon bond of the 1-alkenes, L. A. Harrah and D. W. Mayo—298(L)
Second-order perturbation calculation of the hindered rotator model for adsorbed hydrogen, Arthur A. Evett—789

Scattering

Quantum mechanical (phase shift) analysis of the differential elastic scattering of molecular beams, Richard B. Bernstein—795
Scattering of metastable helium atoms in helium, neon and argon, G. M. Smith and E. E. Muschlitz, Jr.—1819
Sparking potential and molecular structure of unsaturated hydrocarbon gases, R. W. Crowe and J. C. Devins—413
Total collision cross sections for the interaction of molecular beams of cesium chloride with gases. Influence of the dipole-dipole force upon the scattering, Hugo Schumacher, Richard B. Bernstein, and Erhard W. Rothe—584

Sedimentation

Comment on dynamical theory of electrosedimentation, C. J. MacCallum—1263(L)

Semiconductors

Activity coefficients of electrons and holes at high concentrations, Arthur J. Rosenberg—665
Effect of oxygen on the semiconductivities of mesonaphthodianthrene and mesonaphthodianthrone, H. Kuroda and E. A. Flood—952(L)
Organic semiconductors II. The electrical resistivity of organic molecular complexes, Mortimer M. Labes, Robert Sehr, and Monisha Bose—868
Quantitative considerations concerning catalysis at a semiconductor surface, C. G. B. Garrett—966

Shock Waves (see also Detonation)

Comments on hypervelocity wave phenomena in condensed explosives, R. F. Chaiken—760
Correlation of experimental results for the vibrational relaxation of nitric oxide, Frank Robben, Philip R. Monson, and John J. Allport—630(L)
Erratum: Reflected shock technique for studying fast chemical reactions, [J. Chem. Phys. 30, 257 (1959)] Roger A. Strehlow and Arthur Cohen—618(L)
Flash-absorption spectroscopy of free radicals in shock waves, R. M. Ikeda—311(L)
Limitations of the reflected shock technique for studying fast chemical reactions, Theodore A. Brabbs, Steven A. Zlatarich and Frank E. Belles—307(L)
Thickness of shock fronts in argon, K. Hansen and D. F. Hornig—913

Solutions (see also Liquids)

Compression of flexible chain molecules in solution, Robert Simha and J. L. Zakin—1790
Critical solution phenomenon in two-component liquid systems. The system water-ethylene glycol mono-isobutyl ether, De F. P. Rudd and B. Widom—1815
Nuclear spin-lattice relaxation in solutions, Richard W. Mitchell and Melvin Eisner—86
On the structure of dilute solutions of metals, E. Charles Evers—618(L)
Solubility of hydrogen and deuterium in liquid argon, H. Volk and G. D. Halsey, Jr.—1132
Temperature dependence of proton relaxation times in aqueous solution of paramagnetic ions. II. $CrCl_3$, Thomas H. Brown, Robert A. Bernheim, and H. S. Gutowsky—1593(L)

Spectra (see Absorption Spectra, Emission Spectra, Fluorescence, Raman Spectra)

Electron spin resonance line shape of a polycrystalline CH radical, Roland Lefebvre—1826

Statistical Mechanics (see Mechanics, Statistical)

On the temporal evolution of isolated dynamical systems, S. Golden and H. C. Longuet-Higgins—1479

Surface Phenomena

Absorption spectra of anodic niobium oxide films, W. M. Graven, R. E. Salomon, and G. B. Adams, Jr.—954(L)
Cuprous halide films on alkali halide crystals, L. M. Kraemer—991
Distribution functions of a fluid in an external potential field; Application to physical adsorption, William A. Steele and Marvin Ross—464
Interaction of condensable gases with cold surfaces, G. W. Sears and J. W. Cahn—494
Second-order perturbation calculation of the hindered rotator model for adsorbed hydrogen, Arthur A. Evett—789
Surface catalyzed excitation with N and O atoms, Gene G. Mannella, Robert R. Reeves and Paul Harteck—636(L)
Utilization of order-disorder theory in physical adsorption. I. Fundamental equations, S. Bumble and J. M. Honig—424

Thermal Conductivity

Errata: Contributions of bound, metastable, and free molecules to the second virial coefficient and some properties of double molecules, and Initial pressure dependence of thermal conductivity and viscosity [J. Chem. Phys. **31**, 1531, 1545 (1959)] Daniel E. Stogryn and Joseph O. Hirschfelder—942(L)

Thermal Diffusion

Thermal-diffusion-column shape factors for the Lennard-Jones (12-6) potential, B. B. McInteer and M. J. Reisfeld—570

Thermodynamic Properties

Calculation of equilibrium constants for several isotope exchange reactions involving N_2O_4, E. U. Monse—312(L)
Compression and phase transitions of solid NH_3, SiF_4, H_2S, and CF_4, John W. Stewart—128
Critical solution phenomenon in two-component liquid systems. The system water-ethylene glycol mono-isobutyl ether, De F. P. Rudd and B. Widom—1815
Cube-root law for the activity coefficient quotient of the dissociation of HSO_4^- ion, George E. Walrafen—947(L)
Excess free energy in dehydrogenated palladium, Sister Judith Mary Singer, O.P. and Gilbert W. Castellan—633(L)
First-order phase transitions of six normal paraffins at elevated pressures, R. R. Nelson, W. Webb, and J. A. Dixon—1755
Frequency distribution and the specific heat of NaCl at low temperatures, Elizabeth M. Arase and Robert D. Hatcher—1703
Heat capacity of ice at low temperatures, P. Flubacher, A. J. Leadbetter and J. A. Morrison—1750
Heat capacity of uranium tetrafluoride from 1.3 to 20°K and the thermodynamic functions to 300°K. Calorimeter for the range 0.8 to 20°K, John H. Burns, Darrell W. Osborne, and Edgar F. Westrum, Jr.—387
Heats of formation of BF_2Cl and $BFCl_2$, Stuart R. Gunn and Russell H. Sanborn—955(L)
Heterogeneous reactions studied by mass spectrometry. I. The reaction of $B_2O_3(s)$ with $H_2O(g)$, David J. Meschi, William A. Chupka, and Joseph Berkowitz—530
Heterogeneous reactions studied by mass spectrometry. II. The reaction of $Li_2O(s)$ with $H_2O(g)$, Joseph Berkowitz, David J. Meschi, and William A. Chupka—533
Lattice heat capacity of the rare earths. The heat capacities of yttrium and lutetium from 15–350°K, L. D. Jennings, R. E. Miller and F. H. Spedding—1849
Lattice vibrations in alkali halide crystals. II. Potassium and rubidium halides; cesium fluoride, Arnold M. Karo—7
Mass spectra of aluminum (III) halides and the heats of dissociation of $Al_2F_6(g)$ and $LiF \cdot AlF_3(g)$, Richard F. Porter and Ernest Zeller—858
Mass spectra of vapors in the Al-AlF_3 and Al-LiF-AlF_3 systems, Richard F. Porter—951(L)
Mass spectrometric determination of the dissociation energies of the molecules AgAu, AgCu and AuCu, Marcel Ackerman, Fred E. Stafford and Jean Drowart—1783
Mass spectrometric study of the heats of dimerization of the alkali chlorides, Thomas A. Milne and H. Michael Klein—1628
Molecular structure of lithium chloride dimer. Thermodynamic functions of Li_2X_2 (X = Cl, Br, I)., S. H. Bauer, Tadashi Ino, and Richard F. Porter—685
New type of freezing point apparatus. The freezing points of dilute lanthanum chloride solutions. G. Scatchard, B. Vonnegut and D. W. Beaumont—1292
Optical transparency and resistance to flash heating, W. F. Libby—1588(L)
Osmotic pressure of moderately concentrated polymer solutions, Marshall Fixman—370
Partition function ratios for molecules containing nitrogen isotopes, G. M. Begun and W. H. Fletcher—1083
Preparation and properties of scandium dihydride, Joseph C. McGuire and Charles P. Kempter—1584(L)
Separation of boron isotopes. IV. The methyl sulfide-BF_3 system, A. A. Palko and J. S. Drury—779
Separation of gas mixtures in a supersonic jet. II. Behavior of helium-argon mixtures and evidence of shock separation, S. Alexander Stern, P. C. Waterman, and T. F. Sinclair—805
Single-stage fractionation factor for the system: Oxygen vs cobalt di(salicylal)-ethylenediimine-oxygen, L. L. Brown and J. S. Drury—1889(L)
Solubility of hydrogen and deuterium in liquid argon, H. Volk and G. D. Halsey, Jr.—1132
Some thermal data for Bi_2Te_3, G. F. Bolling—305(L)
Statistical mechanics of molecular ions, Robert N. Varney—1708
Erratum and Addendum: Substituted methanes. XXIX. Vibrational spectra, potential constants, and calculated thermodynamic properties for dibromochlorofluoromethane and bromodichlorofluoromethane [J. Chem. Phys. **31**, 1633 (1959)], Robert L. Gilbert, Edward A. Piotrowski, Jerome M. Dowling, and Forrest F. Cleveland—1872(L)

Surface specific heat of an isotropic solid at low temperatures, Marc Dupuis, Robert Mazo and Lars Onsager—1452
Thermodynamic properties of unipositive gaseous elemental ions, John W. Green, Duncan E. Poland, and John L. Margrave—35
Vapor pressures and related thermodynamic properties of the isotopic nitric oxide molecules, Jacob Bigeleisen—1774
Velocity analysis of molecular beams generated from NaOH vapors, V. S. Rao and Richard C. Schoonmaker—1717

Thermodynamics

Application of Ehrenfest equations to liquid-vapor and liquid-solid mixtures of He^4, Olli V. Lounasmaa—443
Casimir coefficients and minimum entropy production, R. E. Nettleton—237
Derivation of thermodynamic relations for three-dimensional systems, Francis S. Manning and William P. Manning—1554
Entropy production in chemical reactions, R. P. Rastogi and R. C. Srivastava—79
Erratum: Validity and consequences of Schreinemakers' theorem on ternary distillation lines [J. Chem. Phys. **31**, 308 (1959)], A. E. Korvezee and J. L. Meyering—304(L)
On inversion of the linear laws of irreversible thermodynamics, Eugene Helfand—319
On the reciprocal relations of onsager, Bernard D. Coleman and Clifford Truesdell—28
Flow equations and frames of reference for isothermal diffusion in liquids, John G. Kirkwood, Robert L. Baldwin, Peter J. Dunlop, Louis J. Gosting and Gerson Kegeles—1505
Thermodynamics, stationary states, and steady-rate processes. V. A collection of corollaries, R. J. Tykodi—40
Thermodynamics, stationary states, and steady-rate processes. VI. Forced vaporization of selected liquids, Ted A. Erikson and R. J. Tykodi—46

Transport Phenomena

Kinetic theory of the moderately dense rigid sphere fluid. IV. The fluxes of matter, momentum and energy in a mixture, Robert A. Harris and Stuart A. Rice—1046
Molecular friction in dilute gases, James T. O'Toole and John S. Dahler—1496
On the temporal evolution of isolated dynamical systems, S. Golden and H. C. Longuet-Higgins—1479
Optical transparency and resistance to flash heating, W. F. Libby—1588(L)
Potential curves for N_2, NO, and O_2, Joseph T. Vanderslice, Edward A. Mason, William G. Maisch and Ellis R. Lippincott—614(L)
Quantum corrections for transport coefficients, Sang-Il Choi and John Ross—1324
Statistical mechanics of transport processes. XIV. Linear relations in multicomponent systems, John D. Kirkwood and Donald D. Fitts—1317
Structure of transport equations, S. Tamor—1421
Transport processes in liquid alloys. II. The electrical force on an ion, Paul C. Mangelsdorf, Jr.—1151

Ultrasonics

Molar sound velocity in inorganic acids, P. R. K. L. Padmini, K. Subba Rao and B. Ramachandra Rao—1268(L)
Multiple velocity dispersion in halomethane gas mixtures, J. B. Calvert and R. C. Amme—1270(L)
Sound dispersion in ethane and 1.1-difluoroethane, L. M. Valley and Sam Legvold—627(L)
Ultrasonic attenuation in the critical region, Marshall Fixman—1363
Vibrational transitions and the intermolecular potential, Robert C. Amme and Sam Legvold—91

Valence and Chemical Bond

Ambiguity in the determination of self-consistent bond orders, G. G. Hall—953(L)
Bond lengths and nuclear quadrupole coupling in vinyl halides, E. Spinner—611(L)
Bond lengths and nuclear quadrupole coupling in vinyl halides, E. Bright Wilson, Jr.—612(L)
Bond polarizability components, George W. Chantry and Robert A. Plane—634(L)
Bond shortening by electronegative substituents, Henry A. Bent—1260(L)
Comments on Carpenter's paper "Density of the bonding electrons in diamond," James A. Ibers—299(L)
Correlation of bond shortening by electronegative substituents with orbital hybridization, Henry A. Bent—1259(L)
Density of the bonding electrons in diamond, G. B. Carpenter—300(L)
Electronegativities from a comparison of bond lengths in AH and AH^+, Henry A. Bent—1258(L)
Electronegativity effects of hybridized carbon atoms, M. G. Brown—1881(L)
Erratum: Improved molecular orbitals and the valence bond theory [J. Chem. Phys. **33**, 301 (1960)], A. C. Hurley—1872(L)
Explanation of the non-additivity of bond lengths, Henry A. Bent—304(L)
Halogen bond character in the alkyl halides, B. P. Dailey—1641
Improved molecular orbitals and the valence bond theory, A. C. Hurley—301(L)
Metal-metal bonding in dicobalt hexacarbonyl diphenylacetylene, David A. Brown—1037
Modification of Koopmans' theorem for conjugated hydrocarbons, J. R. Hoyland and Lionel Goodman—946(L)
Molecular structure correlations, Børge Bak and Lise Hansen-Nygaard—418
Note on Hurley's "Improved molecular orbitals and the valence bond theory," P. Phillipson and R. S. Mulliken—615(L)
On the existence of polyoxides of hydrogen, Sidney W. Benson—306(L)
Orbital radii and the dependence of bond length upon ionicity, hybridization and bond order, J. K. Wilmshurst—813
Strength of the N—N bond in tetrafluorohydrazine, Charles B. Colburn and Frederic A. Johnson—1869(L)
Theorem on separability of electron pairs, Tadashi Arai—95
Three remarks on molecular orbital theory of complex molecules, Robert G. Parr—1183
Valence-bond resonance structures for a triplet state, A. D. McLachlan—663
Valence structures of the higher borides, William N. Lipscomb and Doyle Britton—275

Viscosity

Errata: Contributions of bound, metastable, and free molecules to the second virial coefficient and some properties of double molecules, and Initial pressure dependence of thermal conductivity and viscosity [J. Chem. Phys. **31**, 1531, 1545 (1959)] Daniel E. Stogryn and Joseph O. Hirschfelder—942(L)
Gradient dependence of intrinsic viscosity of freely flexible linear macromolecules, Anton Peterlin—1799
Statistical mechanical theory of the viscosity coefficients of binary liquid solutions, Richard J. Bearman and Peter F. Jones—1432
Structure of glass-forming halides. II. Liquid zinc chloride, J. D. Mackenzie and W. K. Murphy—366
Viscosity of mixtures of hydrogen and water vapor at 295°K, J. W. Fox and A. C. H. Smith—623(L)

X-ray Diffraction

Crystal structure of β-Ga_2O_3, S. Geller—676
Lattice dimensions of NbC as a function of stoichiometry, C. P. Kempter, E. K. Storms, and R. J. Fries—1873(L)
Preparation and crystal structures of RuC and OsC, Charles P. Kempter and M. R. Nadler—1580(L)
Small angle x-ray scattering study of sodium montmorillonite clay suspensions, Robert Hight, Jr., William T. Higdon, and Paul W. Schmidt—1656
Structure in ionic solutions. IV., George W. Brady—1079
Structure of potassium hydroxide: An x-ray and infrared study, James A. Ibers, Junji Kumamoto, and Robert G. Snyder—1164
Structure of the complex ion in aqueous solutions of zirconyl and hafnyl oxyhalides, George M. Muha and Philip A. Vaughan—194
Thermal expansion of delta and epsilon zirconium hydrides, Charles P. Kempter, Reed O. Elliott, and Karl A. Gschneidner, Jr.—837
X-ray scattering by a cell-model liquid, L. H. Lund—1086